The shape casting of titanium alloys. S/762/61/000/000/024/029

The degree of metal/mold interaction was determined by measuring the microhard-ness on a cross-section of a specimen. The tests indicated that the degree of surface contamination of the metal depends on the size of the casting, and that on large specimens two applications of graphite layer to the inner mold surface depressed the surface contamination appreciably, but that a third graphite layer did not afford any appreciable additional improvement. Hence, application of a single graphite layer is recommended for parts with a 6-mm cross-sectional dimension, two layers for larger pieces. Electrode-graphite, steel, and cast-iron molds or chills were also tested. Graphite molds left the surface smooth and free of pores and cavities; their shortcoming is their inadequate durability (usually no more than a single casting). Iron and steel chills also produced high-grade castings. Successful metal-chill casting requires smooth pouring, without splashes. Pouring-gate systems with graphite inserts may also be employed to avoid the direct impingement of the liquid-Ti stream onto protruding portions of the mold. The freedom from casting skin and ceramic adhesions simplifies subsequent operations considerably. The details of unsuccessful attempts to use dismountable ceramic molds prepared on wooden patterns are related. Electric-arc vacuum casting furnace. The technical details of a consumable-electrode furnace built during the latter part of 1958 are described. A cross-section of the furnace and its equipment for casting 10- to 15-kg Ti parts is shown. A graphite crucible is supported by a water-cooled ring. Some of the Ti from the first melt remains attached to the bottom and sides of the

Card 2/3

The shape casting of titanium alloys. S/762/61/000/000/024/029

crucible in the first pouring. Upon hardening, this metal does not remelt during subsequent fusions and serves as a lining of sorts that prevents the immediate contact of the metal with the graphite. The electrode is a rod of Ti prepared in a vacuum arc furnace in a water-cooled Cu crystallizer or a forged rod obtained from a large casting. Design details and the mode of operation are explained in detail. The average service life of a graphite crucible is 30 melts. Chemical composition and technological and mechanical properties of cast Ti alloys. 400 melts were cast. 75% contained less than 0.2% C; all those containing more C occurred during the initial trial periods, when the magnetic field created by the passage of the 4-6,000-a current through the support ring deflected the arc toward one side of the crucible and melted a breach into the protective metallic "lining," so that the fresh liquid metal contacted the bared graphite wall. Analytical details before and after smelting are reported. The pourability of the alloys BT (VT) -1, -5, -5-1, and -3-1 was tested by pouring spiral castings in a steel mold with graphite-insert pouring gate and in ceramic molds made by the lost-wax method. 410-460-mm lengths were thus poured at 2,040-2,050°C. Shrinkage, tested on 30-mm diam, 300 mm long, rods, was: linear 1.0-1.2%, volumetric 2.5-3.0%. Tensile strength, elongation, and necking vs. T are shown for the VT 1, -3, -3-1, -5, -7, -8, -9, and -10 Ti alloys. There are 9 figures and 1 (unnumbered) table; no references. The participation of B.M.Funin and N.I.Busarov in the mold work and of V.I.Kolinskiy and L.N.Soldatova in the vacuum-furnace work is acknowledged. ASSOCIATION: None given.

Card 3/3

L 14320-65 EPF(n)-2/EWT(m)/EWP(b)/EWP(t) Pu-4 ASD(m)-3/APTC(p)/IJP(c)
JD/JG/MLK
ACCESSION NR: AT4048053 S/0000/64/000/000/0058/0073

AUTHOR: Ageyev, N. V.; Glazunov, S. G.; Petrova, L. A.; Tarasenko, G. N.; Grankova, L. P.

TITLE: Stability of Beta alloys of the Ti-Mo-Cr-Fe-Al system

SOURCE: Soveshchaniye po metallurgii, metallovedeniyu i primeneniyu titana i yego splavov. 5th, Moscow, 1963. Metallovedeniye titana (Metallography of titanium); [illegible] Moscow, Izd-vo Nauka, 1964, 58-73

alloy, molybdenum alloy, chromium alloy, iron alloy, [illegible]

ABSTRACT: Previous studies have shown the critical concentration for the β-solid solution of another element in titanium to be between 6 and 9%, and that the most stable of these combinations are formed by rhenium, nickel, molybdenum, and tungsten. Recently, there has been much interest in multicomponent alloys with the metastable β-structure, which have high technological versatility when hardened. For these and other reasons the authors decided to study the Ti-Mo-Fe-Cr-Al system, both in its β-phase and with an eye to choosing alloys for more detailed experimentation. The samples chosen for experimentation had molybdenum in concentrations of wt. 2-8%, chromium from 4-9%, iron from 3-[illegible]%, titanium from 81-83%,

Card 1/2

and aluminum constant at 3%. All samples but one were held at 200C for 100 hours, and that one was held at 200C for 9 hours. Two samples were also held at 300C for 100 hours; all the remaining samples disintegrated. Four of them disintegrated with the precipitation of the W-phase, which lasted 100 hours longer; the others disintegrated with the precipitation of the α-phase. Samples which had 2 and 5% Mo did not depend, for the stability of their properties, on the corres-

11 photomicrographs, and 4 roentgenograms.

ASSOCIATION: none

SUBMITTED: 15Jul64 ENCL: 00 SUB CODE: MM

NO REF SOV: 005 OTHER: 000

Card 2/2

ACCESSION NR: AT4040421 S/000/64/000/000/0177/0182

AUTHOR: Bokshteyn, S. Z.; Glazunov, S. G.; Yemel'yanova, T. A.; Kabanov, Yu. N.; Kishkin, S. T.; Mirskiy, L. M.

TITLE: Thermomechanical treatment of titanium alloys with β-structure

SOURCE: Protsessy* diffuzii, struktura i svoystva metallov (Diffusion processes, structure, and properties of metals); sbornik statey. Moscow, Izd-vo Mashinostroyeniye, 1964, 177-182

TOPIC TAGS: titanium alloy, beta structure, mechanical property, thermomechanical treatment, thermomechanical treatment effect

ABSTRACT: The effect of thermomechanical treatment on the mechanical properties of β-titanium alloys VT15 (3.76% Al, 7.80 Mo, 10.7% Cr) and V-120 (US alloy, 3.1% Al, 11.6% Cr, 12.6% V) were investigated. Alloy specimens were held at 760C for 30 minutes, then rolled with a reduction of either 10 or 45% and immediately quenched (high temperature thermomechanical treatment, HTTMT) or they were cooled at 350C, held for 2—3 minutes, rolled with a reduction of 10 or 40%, and

Card 1/3

ACCESSION NR: AT4040421

immediately quenched. In both cases, quenching was followed by aging at 450C for 25 or 50 hr. The mechanical properties of differently treated alloys are shown in Table 1 of the Enclosure. In stress rupture tests [apparently at 400C] under a stress of 100 kg/mm^2, the VT15 alloy had a rupture life of 13.5—15.0 hr, elongation of 17.2—19.0%, and a reduction of area of 49.0—51.5% after HTTMT. The V-120 alloy similarly treated had a rupture life of 97—100 hr. Orig. art. has: 5 figures and 4 tables.

ASSOCIATION: none

SUBMITTED: 09Dec63 ATD PRESS: 3049 ENCL: 01

SUB CODE: MM NO REF SOV: 000 OTHER: 001

Card 2/3

ACCESSION NR: AT4040421 ENCLOSURE: 01

Table 1. Mechanical properties of VT15 titanium alloy

Treatment	Reduction %	Aging, Hrs	Test Temperature, C	Tensile Strength Kg/mm²	Yield Strength, Kg/mm²	Elongation, %	Reduction of Arc %	Notch Toughness, Mkg/cm²
LITHT	10	25	20	153	146	3.0	11.3	1.7
	10	25	400	127	-	5.2	31.5	-
	10	50	20	147	141	2.6	7.6	1.2
	10	50	400	117	-	5.0	31.5	-
	45	25	20	159	155	3.0	10.6	1.1
	45	25	400	123	-	6.0	38.2	-
	45	50	20	152	149	4.2	12.1	1.3
	45	50	400	-	-	-	-	-
LITHT	45	25	20	100	155	3.1	23.0	1.0
	45	25	400	124.5	-	3,5	21.2	-
	45	50	20	156	148	2.9	11.0	1.1
	45	50	400	122	-	4.0	23.3	-
Annealing at 760C, water quenched	-	25	20	126	123	7.8	31.2	-
	-	25	400	118	-	6.0	28.0	-
	-	50	20	134	128	6.2	16.7	-
	-	50	400	122	-	6.0	35.0	-

Card 3/3

L 8945-65 EWT(m)/EWP(k)/T/EWP(q)/EWP(b) Pf-4 IJP(c) MJW/JD/HW

ACCESSION NR: AP4044138 S/0129/64/000/008/0037/0038

AUTHOR: Glazunov, S. G.; Khorev, A. I.

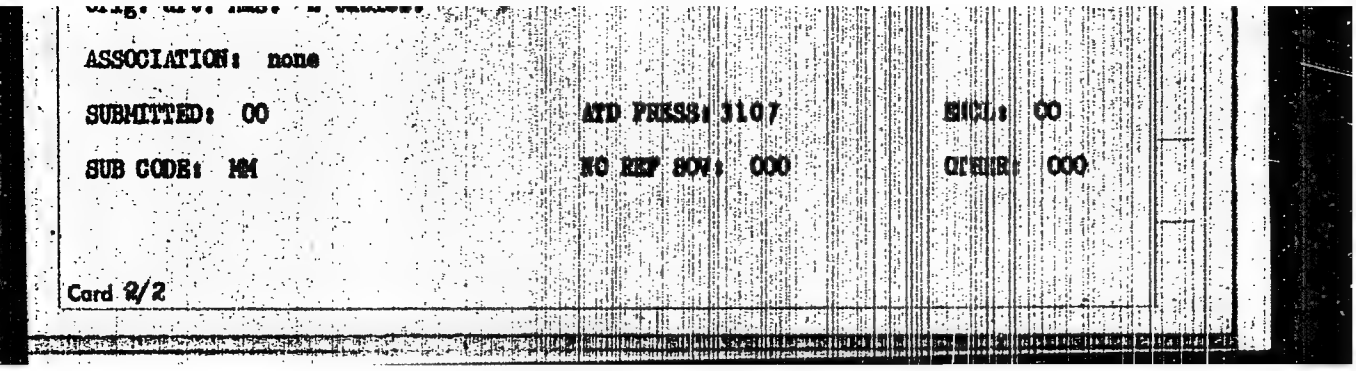
TITLE: Effect of high-temperature thermomechanical treatment on the strength of VT15 alloy in biaxial tension

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 8, 1964, 37-38

TOPIC TAGS: VT15 alloy, VT15 alloy burst strength, high temperature thermomechanical treatment, titanium alloy thermomechanical treatment, VT15 alloy thermomechanical treatment, titanium alloy burst strength

ABSTRACT: Four VT15 titanium tubes with a wall thickness of 1.37-1.62 mm were extruded at 1050C. Two of the tubes were immediately water quenched; two others were air cooled to room temperature, then annealed at 800C for 10 min and water quenched, which is conventional procedure for the VT15 alloy. The former treatment was a high-temperature thermomechanical (HTTM) treatment

treated tubes failed in a brittle manner at a burst strength of 125--128 kg/mm . Increase of the temperature of the second aging to 590C and of its duration to 30 min had an adverse effect. The containers made of HTTM-treated tubes failed in a ductile manner at a strength of 150--160 kg/mm . In this case a prolonged second aging at 590C did not improve strength or ductility. The structure of aged containers consists of β-phase with broken grain boundaries. In the HTTM-treated containers, the grain boundaries are much thinner



ASSOCIATION: none

SUBMITTED: 00 ATD PRESS: 3107 ENCL: 00

SUB CODE: MM NO REF SOV: 000 OTHER: 000

Card 2/2

L 13996-65 EWT(d)/EWT(m)/EWP(w)/EWA(d)/EWT(r)/EWP(t)/EWP(k)/EWP(b)/EWA(h) Pf-4/
Peb IJP(c)/ASD(m)-3 EM/RM/MJW/JD/HW
ACCESSION NR: AP4047014 S/0135/64/000/010/0027/0028

AUTHOR: Glazunov, S. G. (Doctor of technical sciences); Khorev, A. I. (Engineer); Moiseyev, V. N. (Engineer); Geras'kova, L. V. (Engineer)

TITLE: Effect of plastic deformation on the structure and mechanical properties of welded joints in VT14, VT15, and VT16 titanium alloys

SOURCE: Svarochnoye proizvodstvo, no. 10, 1964, 27-28

TOPIC TAGS: titanium alloy, titanium alloy weld, weld cold working, weld cold rolling, cold rolled weld, titanium alloy welding

ABSTRACT: Hot rolled VT14, VT15, and VT16 titanium alloy sheets 3 mm thick were cold rolled to thicknesses of 2.4—1.2 mm and cut in halves in the longitudinal direction. The halves were joined by argon-shielded arc welding, annealed at 780—800C, cold rolled to a thickness of 1.2 mm (which corresponded to reductions of 0—50%), and heat treated under various conditions. The treatment described, especially at reductions of at least 30—40%, was found to improve the structure and consequently the mechanical properties of the welds and the heat-

Card 1/5

L 13996-65
ACCESSION NR: AP4047014

affected zones (see Figs. 1-3 of the Enclosure) to such an extent that the failure frequently occurred in the base metal. The process can be applied to welded cylindrical or conical shells which can be cold worked by spinning. Orig. art. has: 3 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 03 SUB CODE: MM, IE

NO REF SOV: 000 OTHER: 000 ATD PRESS: 3137

Card 2/5

L 13996-65
ACCESSION NR: AP4047014

ENCLOSURE: 01

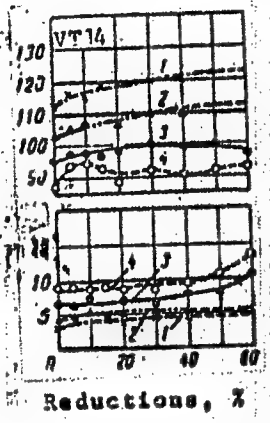


Fig. 1. Effect of plastic deformation on properties of VT14 alloy

1 - Quenched from 850C, aged at 520C for 16 hr; 2 - quenched from 850C, aged at 560C for 4 hr; 3 - air cooled from 800C; 4 - quenched from 850C.

Card 3/5

L 13996-65
ACCESSION NR: AP4047014

DISCLOSURE: 02

0

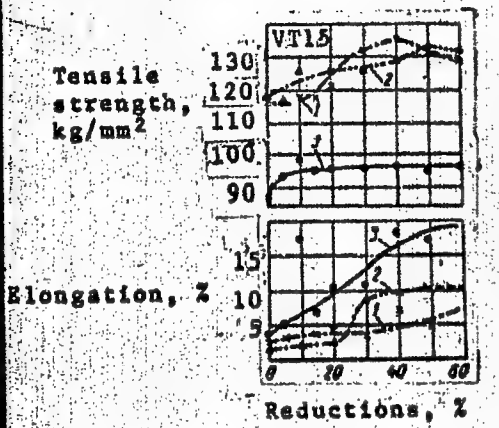


Fig. 2. Effect of plastic deformation on properties of VT15 alloy

1 - Quenched from 800C, aged at 480C for 25 hr and at 560C for 1 hr; 2 - quenched from 800C, aged at 480C for 25 hr and at 560C for 0.25 hr; 3 - air cooled from 800C.

Card 4/5

L 13996-65
ACCESSION NR: AP4047014

ENCLOSURE: 03

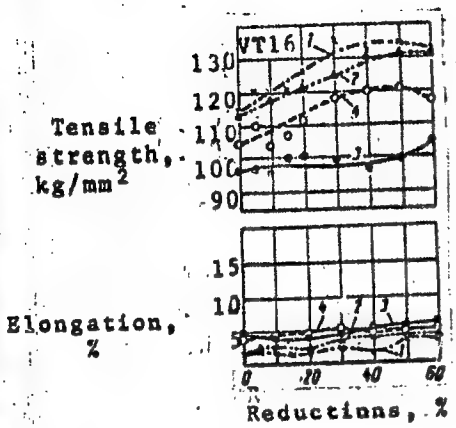


Fig. 3. Effect of plastic deformation on properties of VT16 alloy

1 - Quenched from 790C, aged at 500C for 8 hr; 2 - quenched from 790C, aged at 480C for 16 hr; 3 - quenched from 790C, aged at 540C for 8 hr; 4 - air cooled from 780C.

Card 5/5

L 34533-65 EPA(s)-2/EWP(k)/EWA(c)/EWT(m)/EWP(b)/T/EWP(v)/EWP(t) Pf-4 IJP(c)
ACCESSION NR: AP5000060 JD/HM S/0286/64/000/021/0068/0068

AUTHOR: Glazunov, S. G.; Gruzdeva, L. A.; Moiseyev, V. N.; Poplavko-Mikhaylov, M. V.; Khorev, A. I.; Mikhaylov, B. M.

TITLE: Filler material for welding titanium alloys with a high content of β-phase. Class 49, No. 166221

SOURCE: Byul. izobr. i tovar. znakov, no. 21, 1964, 68

TOPIC TAGS: titanium, titanium alloy, beta titanium alloy, welding, filler wire, electrode wire

ABSTRACT: This Author Certificate introduces a titanium-base filler alloy for welding titanium alloys with a high content of β-phase. To make the filler suitable for any such titanium alloys and to improve the ductility of the weld metal, the filler alloy contains 1—3% Al and 8—10% Mo.

ASSOCIATION: none

SUBMITTED: 16Oct61 ENCL: 00 SUB CODE: MM, IE

NO REF SOV: 000 OTHER: 000 ATD PRESS: 5148

Card 1/1

ACCESSION NR: AP4041145 S/0020/64/156/004/0789/0791

AUTHOR: Ageyev, N. V.; Glazunov, S. G.; Petrova, L. A.; Tarasenko, G. N.; Grankova, L. P.

TITLE: Dislocations in the titanium - molybdenum - iron - aluminum alloys

SOURCE: AN SSSR. Doklady*, v. 156, no. 4, 1964, 789-791, and insert facing p. 790

TOPIC TAGS: alloy dislocation, Ti Mo Fe Al, alloy, chilled alloy microstructure, etching, electromicroscopic study

ABSTRACT: By analyzing the structure of a quenched β - alloy of Ti - Mo - Fe - Al, the authors have found precipitations having the appearance of "sticks". Similar "sticks" were found earlier in quickly chilled Ti - 10% Mo alloys by T. H. Schofield et al. (Acta Metallurgica 7, no. 6, 403, 1959) who described them as regular arrays of etch holes caused by unstable groups of dislocations which are changed during cooling into a stabler net of subgrains. X-ray diffraction patterns obtained by the present authors show no presence of a new phase such as titanium hydride. It is pointed out that dislocations which are present in all metals, become apparent only under favorable conditions of etching. Electromicroscopic study of the "sticks" has actually demonstrated that they are formed by a series of little

Card 1/2

ACCESSION NR: AP4041145

holes. Orig. art. has: 4 figures.

ASSOCIATION: Institut metallurgii im A. A. Baykova (Institute of Metallurgy)

SUBMITTED: 05Feb64 ENCL: 00

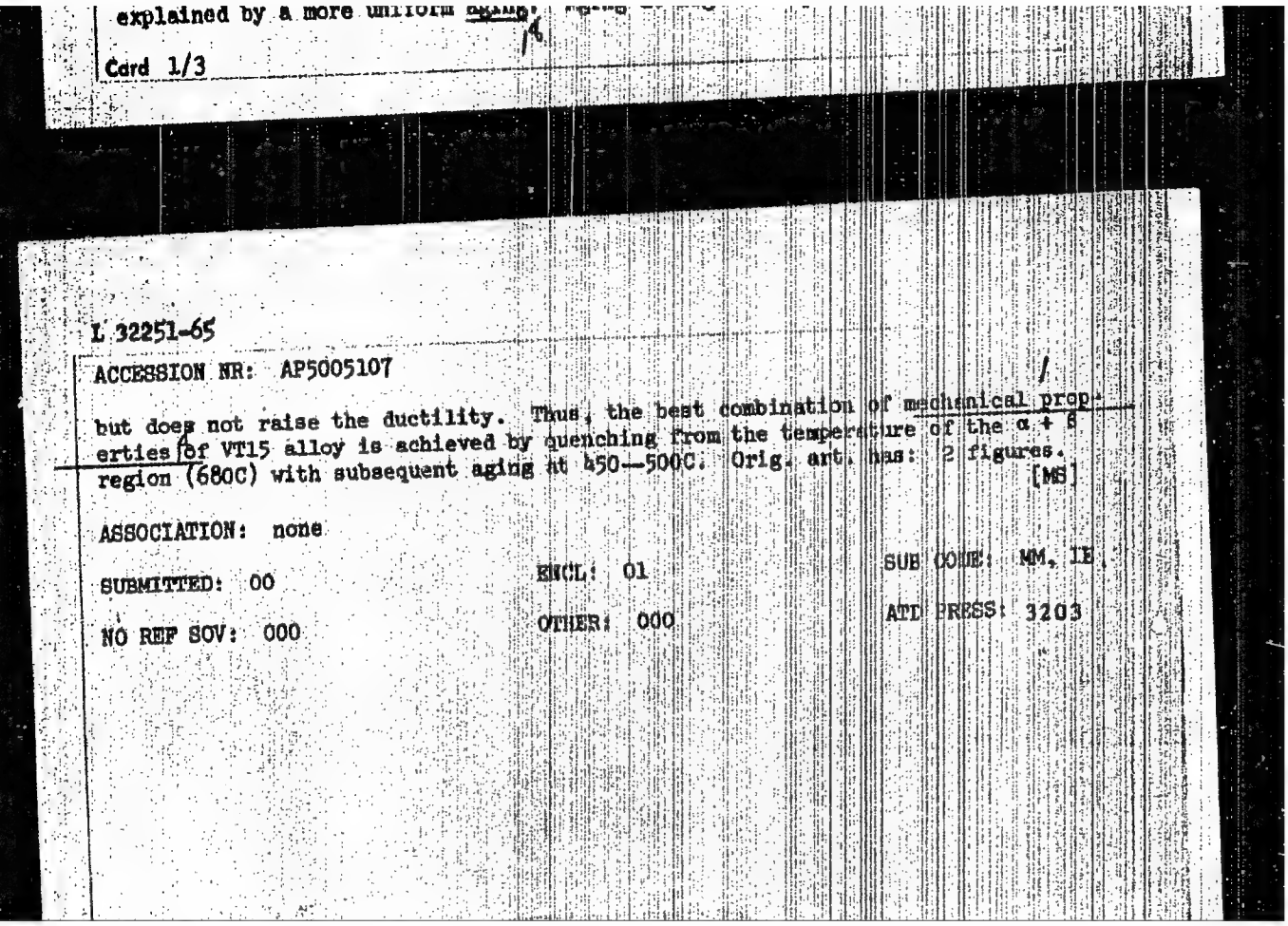
SUB CODE: MM NO REF SOV: 005 OTHER: 002

Card2/2

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, No. 2, 1969, 30-35

TOPIC TAGS: titanium alloy, alloy heat treatment, optimum heat treatment, alloy strength, alloy ductility, VT15 alloy

ABSTRACT: To determine the optimum heat treatment for VT15 titanium alloy (7.08% Mo, 11.19% Cr, 3.15% Al), alloy bars forged from 40-kg ingots were quenched from 800C (the β-region) or from 680C (the α + β region) and then aged at temperatures ranging from 350 to 600C for 25 hr. The alloy quenched from the α + β region reached a maximum strength of 160 kg/mm^2 with aging at 450C; the maximum tensile strength of the alloy quenched from the β-region, 153 kg/mm^2, was obtained with aging at 500C (see Fig. 1 of the Enclosure). The decomposition of the α + β alloy [illegible] aging temperature because of the presence of the α-phase formed



explained by a more uniform [illegible]

Card 1/3

L 32251-65

ACCESSION NR: AP5005107

but does not raise the ductility. Thus, the best combination of mechanical properties of VT15 alloy is achieved by quenching from the temperature of the α + β region (680C) with subsequent aging at 450—500C. Orig. art. has: 2 figures. [MS]

ASSOCIATION: none

SUBMITTED: 00 ENCL: 01 SUB CODE: MM, IE

NO REF SOV: 000 OTHER: 000 ATD PRESS: 3203

L 32251-65

ACCESSION NR: AP5005107

ENCLOSURE: 01

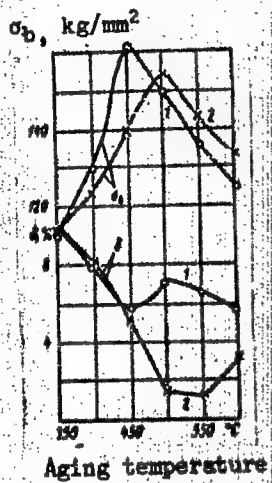


Fig. 1. Effect of the quenching and aging temperature on mechanical properties of VT15 alloy

1 - Quenching from 680C; 2 - quenching from 800C.

Card 3/3

L 28407-66 EWT(m)/EWP(w)/EWP(n)-2/T/EWA(d)/ETI IJP(c) JD/JG/WE/GD

ACC NR: AT6013786 (N) SOURCE CODE: UR/0000/65/000/000/0029/0042

AUTHOR: Glukhova, A. I.; Andreyeva, V. V.; Glazunov, S. G.; Solonina, O. P.; Nikulova, V. F.

ORG: none

TITLE: Study of the corrosion resistance and electrochemical and mechanical properties of alloys of the niobium-titanium system

SOURCE: Korroziya metallov i splavov (Corrosion of metals and alloys), no. 2. Moscow, Izd-vo Metallurgiya, 1965, 29-42

TOPIC TAGS: corrosion resistance, electrochemistry, niobium base alloy, titanium containing alloy, electric potential, mechanical property, metal hydride

ABSTRACT: This is the first in a series of two articles on the same subject: it deals with alloys of the Ti-Nb system containing up to 40% wt. Ti, whereas the second article (same issue, pp 43-58) deals with the same alloys when they contain up to 50% wt. Nb. Mechanical tests of specimens of these alloys showed that the alloys containing 50 and 60% Nb have an ultimate strength of 63 and 68 kg/mm^2, respectively. For the alloy with 70% Nb this strength sharply increases to 78 kg/mm^2, but any further increase in the Nb content is no longer as effective; the increase in hardness follows a similar pattern. Tests of corrosion rate and electrochemical properties in H_2SO_4, HCl, H_3PO_4, HNO_3 and oxalic acids of various concentrations at 40 and 100°C showed that these alloys have a high corrosion resistance in strongly

Card 1/2

L 28[illegible]-65

ACC NR: AT6013786

aggressive media and that this resistance increases with increasing Nb content of the alloy, decreases with increasing Ti content and is higher at 40°C than at 100°C. The maximum corrosion of the alloys in acid media was observed for a potential of -100 mv. The corrosion resistance of the alloys is the higher the more positive (from -100 mv upward) is the potential of the metal-acid redox system. In the presence of more negative potentials a hydride layer forms and the metal gets embrittled owing to the diffusion of hydrogen through the metal. A major finding is that the maximum corrosion resistance of these alloys is entirely determined by the corrosion resistance of Nb to a given medium: for example, if the corrosion resistance of pure Nb to a given H_2SO_4 solution at the temperature T is 0.05 g/(m^2-hr) then any Nb-Ti alloy, whatever the proportions between these two elements, will not have a higher corrosion resistance than that; thus, the use of Nb-Ti alloys corrosion-resistant in the corresponding media makes it possible to reduce the consumption of such a scarce and expensive metal as Nb, and besides this hardly affects the mechanical properties of the alloys. Orig. art. has: 11 figures and 3 tables.

SUB CODE: 07,11/ SUBM DATE: 19Jul65/ ORIG REF: 006/ OTH REF: 002

Card 2/2 LC

L 28106-66 EWT(m)/EWP(w)/T/EWP(t)/ETI IJP(c) JD/JG/WB/GD

ACC NR: AT6013787 (N) SOURCE CODE: UR/0000/65/000/000/0043/0058

AUTHOR: Andreyeva, V. V.; Kazarin, V. I.; Alekseyeva, Ye. L.; Glazunov, S. G.; Solonina, O. P.; Nikulova, V. F.

ORG: none

TITLE: Study of the corrosion resistance and electrochemical and mechanical properties of alloys of the titanium-niobium system

SOURCE: Korroziya metallov i splavov (Corrosion of metals and alloys), no. 2 Moscow, Izd-vo Metallurgiya, 1965, 43-58

TOPIC TAGS: corrosion resistance, electrochemistry, titanium containing alloy, niobium containing alloy, acid, metal heat treatment

ABSTRACT: This is a continuation of a previous investigation (this issue, pp 29-42) with the difference that it deals with alloys of the Ti-Nb system containing up to 50% wt. Nb. Both metals in unalloyed state have a high corrosion resistance, but in certain solutions, e.g. sulfuric and hydrochloric acid solutions, Ti dissolves at a sufficiently fast rate whereas Nb remains corrosion-resistant. Hence, the addition of Nb to Ti should increase the corrosion resistance of Ti. Mechanical tests of these alloys show that as the Nb content increases (up to 8%) the ultimate strength of the alloy increases from 57 kg/mm^2 to 92 kg/mm^2; as the Nb content is further

Card 1/2

L 28406-66
ACC NR: AT6013787

increased above 8%, however, ultimate strength decreases; a similar pattern of variation with Nb content is displayed by plasticity and hardness. In 10, 40, 60, 75 and 94% solutions of H_2SO_4 the alloys at 40°C, whether in hot-forged state or after heat treatment (heating at 920-650°C for 1 hr, water quenching, aging at 450°C for 10 hr with cooling in air), display a general increase in corrosion resistance with increase in Nb content. A similar pattern, on the whole, is observed when the alloys are placed in HPO_3, HCl, HNO_3, and oxalic acid. For the alloys containing upward of 30% Nb, however, aging leads to decomposition of the β-phase, which deteriorates their corrosion resistance. Plotting of the curves of variation in current density as a function of the specified potentials (starting with -0.8 v and ending with +2.2 v) showed that the maximum corrosion rate corresponds to a potential of -0.25 v. As the Nb content of the alloys increases, the critical density of the passivation current decreases and the normal hydrogen potential shifts in the direction of more positive values. The addition of Nb to Ti enhances the corrosion resistance of Ti in solutions of non-oxidizing acids and does not affect the high corrosion resistance of Ti in oxidizing solutions such as 57% HNO_3 or a mixture of HNO_3 and HCl in the ratio of 1:1 or 2:1 at 100°C. Orig. art. has: 9 figures, 5 tables.

SUB CODE: 07,11, SUBM DATE: 19Jul65/ ORIG REF: 003/

Card 2/2

L 55852-65 EWT(m)/EWP(w)/EWA(d)/T/EWP(t)/EPF(n)-2/EWP(b) [illegible] IJP(c) JD/JG

ACCESSION NR: AP5013117 UR/0370/65/000/002/0141/0146
669.295

AUTHOR: Ageyev, N. V. (Moscow); Glazunov, S. G. (Moscow); Petrova, L. A. (Moscow); Tarasenko, G. N. (Moscow); Grankova, L. P. (Moscow)

TITLE: Hot hardness in β alloys of the Ti-Mo-Cr-Fe-Al system

SOURCE: AN SSSR. Izvestiya. Metally, no. 2, 1965, 141-146

TOPIC TAGS: titanium alloy, molybdenum alloy, chromium alloy, aluminum alloy, iron alloy, metal mechanical property

ABSTRACT: Hot hardness measurements on six Ti-Mo-Cr-Fe-Al alloys gave a preliminary idea of the over-all high temperature strength properties. Measurements were in the 20-1000°C range (after holding for one minute) and hardness versus time plots (1, 5, 15, 30 minutes) were also obtained at 20, 500, and 800°C under a load

heat-treated (forged) alloys maintained a higher hot hardness than heat treated at-

Card 1/2

L 55852-65

ACCESSION NR: AP5013117

loys, i.e. hardness at 600°C was about the same as room temperature. A sharp drop is noticed after 700°C. The 700°C reheat does not provide enough time for the attainment of equilibrium conditions. A truer picture of β precipitation would be attained with longer annealing time under vacuum. Hardness versus time curves sometimes show slight rises with increasing time due to precipitation of β. High temperature hardness in the 20-600°C range indicated effectual high temperature strengthening. Orig. art. has: 2 figures, 1 table.

ASSOCIATION: none

SUBMITTED: 24Feb64 ENCL: 00 SUB CODE: MM

NO REF SOV: 005 OTHER: 000

L 57509-65 EWT(m)/EWP(w)/EPF(n)-2/EWA(d)/EPR/T/EWP(t)/EWP(b)/EWA(c) Pe-4/Pu-4
IJP(c) JD/JG

ACCESSION NR: AP5013155 UR/0129/65/000/005/0033/0035
669.295'71'26'20:621.785.74

AUTHOR: Ageyev, N. V.; Glazunova, S. G.; Petrova, L. A.; Tarenenko, O. N.; Grankova, L. P.

TITLE: Aging of β-alloys in the Ti-Mo-Cr-Fe-Al system

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 5, 1965, 33-35, and insert facing p. 24

TOPIC TAGS: titanium alloy, chromium alloy, molybdenum alloy, aluminum alloy, metal physical property, metal hardness, metal aging

ABSTRACT: An attempt was made to find an aging treatment which gives maximum hardness and strength. A series of β-alloys were selected for studying structure and hardness as a function of aging

Card 1/4

L 57509-65
ACCESSION NR: AP5013155

fig. 1 of the Enclosure. The alloys were aged, after prior annealing and treatment, for one hour at temperatures ranging from 300 to 1000°C. The hardness shows a

Card 2/4

KHOTIN, A.I.; GLAZUNOV, S.G.; LEVAKOVSKIY, A.M.

Hardening of the VT15 alloy by heat treating. Metalloved. i term. obr. met. no. 2:50-52 F '65. (MIRA 18:12)

L 39364-65 EWT(m)/EWP(w)/EWA(d)/T/EWP(t)/EWP(k)/EWP(z)/EWP(b)/EWA(c) P(-4
RDW/JD/RM
ACCESSION NR: AP5013159 UR/0129/65/000/005/0045/0048
669.295:620.18:539.37:621.79

AUTHOR: Glazunov, S. G.; Khorev, A. I.; Polyak, E. V. 30 B

TITLE: Thermomechanical treatment of VT15 alloy

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 5, 1965, 45-48, and insert facing p. 40

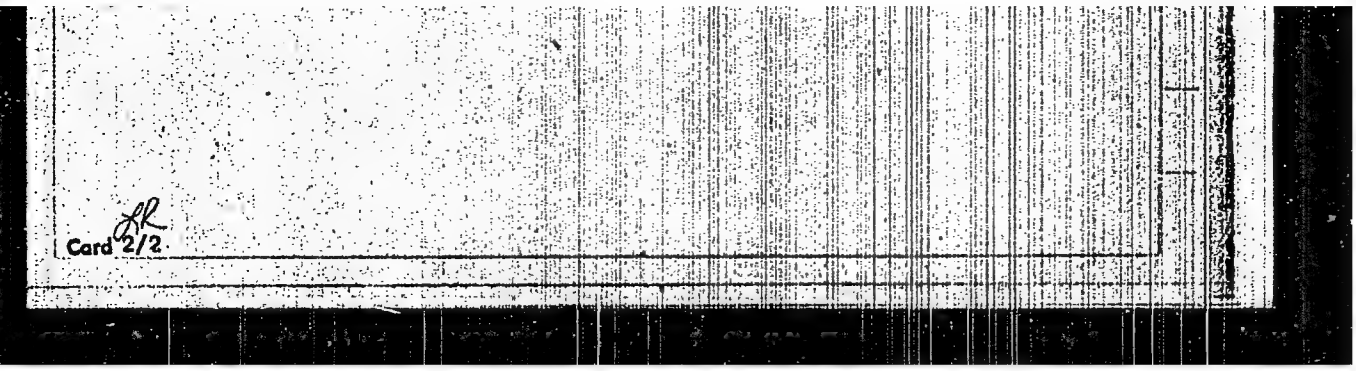
TOPIC TAGS: ausforming, thermomechanical treatment, metal mechanical property, metal deformation, titanium alloy

ABSTRACT: Attempts were made to increase the ductility of VT15 (probably VT15) while retaining its high strength. The area of primary interest was the thermomechanical history of the alloy, above and beyond ordinary quenching and aging. Among the treatments used was a combination of hot deformation (85%) in the single phase β-region at 1050°C and quenching in water with aging at 480°C for 25 hrs, and subsequent re-aging at 560°C for 15 min. This was combined with various annealing and aging treatments, all designed for maximizing strength and ductility. Metallographic studies using optical and electron microscopy indicate how dispersed α-phase precipitation affects aging and mechanical properties of VT15. In all cases the

Card 1/2

L 58364-65
ACCESSION NR: AP5013159

microstructures show α-phase needles dispersed in a β-matrix. However, the length of the needles is noticeably different for each of the treatments. A systematized table summarizes the principal results. Ausforming based on hot working at 1050°C with quenching and subsequent aging at 480 and 560°C is the best treatment for improving mechanical properties. Cold working of the β-phase solution after some hot work results in an increased dispersion of precipitate upon aging.

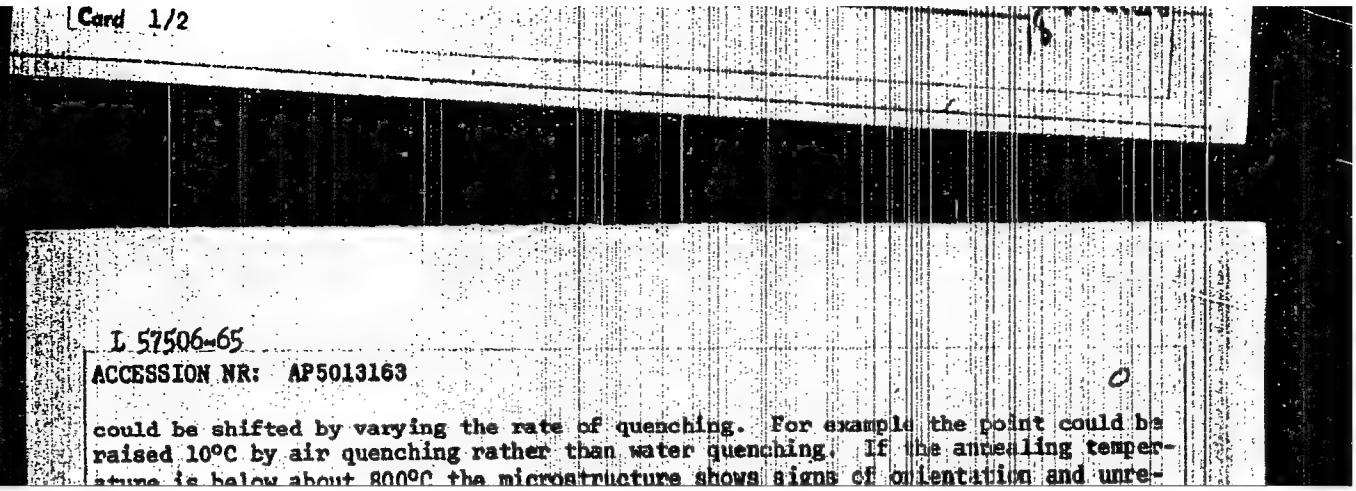


...in the heat treatment of clad VT15 alloy

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 5, 1965, 57-59

TOPIC TAGS: titanium alloy, metal cladding, metal hardness, metal mechanical property, metal aging

ABSTRACT: Cladding of Ti alloys for protection against oxidation and hydrogenation is explained. The effects of the clad layer on the heat treatment of VT15 are studied, especially with regard to the influence of the cladding on the cooling rates, etc. Data are given for mechanical properties of clad VT15 as a function of annealing temperature and speed of cooling. Various cooling rates were produced by quenching in water, air, and furnace cooling. The [illegible] for heating times of



L 57506-65

ACCESSION NR: AP5013163

could be shifted by varying the rate of quenching. For example the point could be raised 10°C by air quenching rather than water quenching. If the annealing temperature is below about 800°C the microstructure shows signs of orientation and unre-

L 2121-66 EWT(m)/EWP(i)/EWA(d)/EWP(t)/EWP(z)/EWP(b) IJP(c) MJW/JD
ACCESSION NR: AP5022381 UR/0136/65/000/009/0075/0079
669.295:621.78

AUTHOR: Khorev, A. I.; Glazunov, S. G.; Zilova, T. K.; Novosil'tseva, N. I.; Geras'kova, L. V.

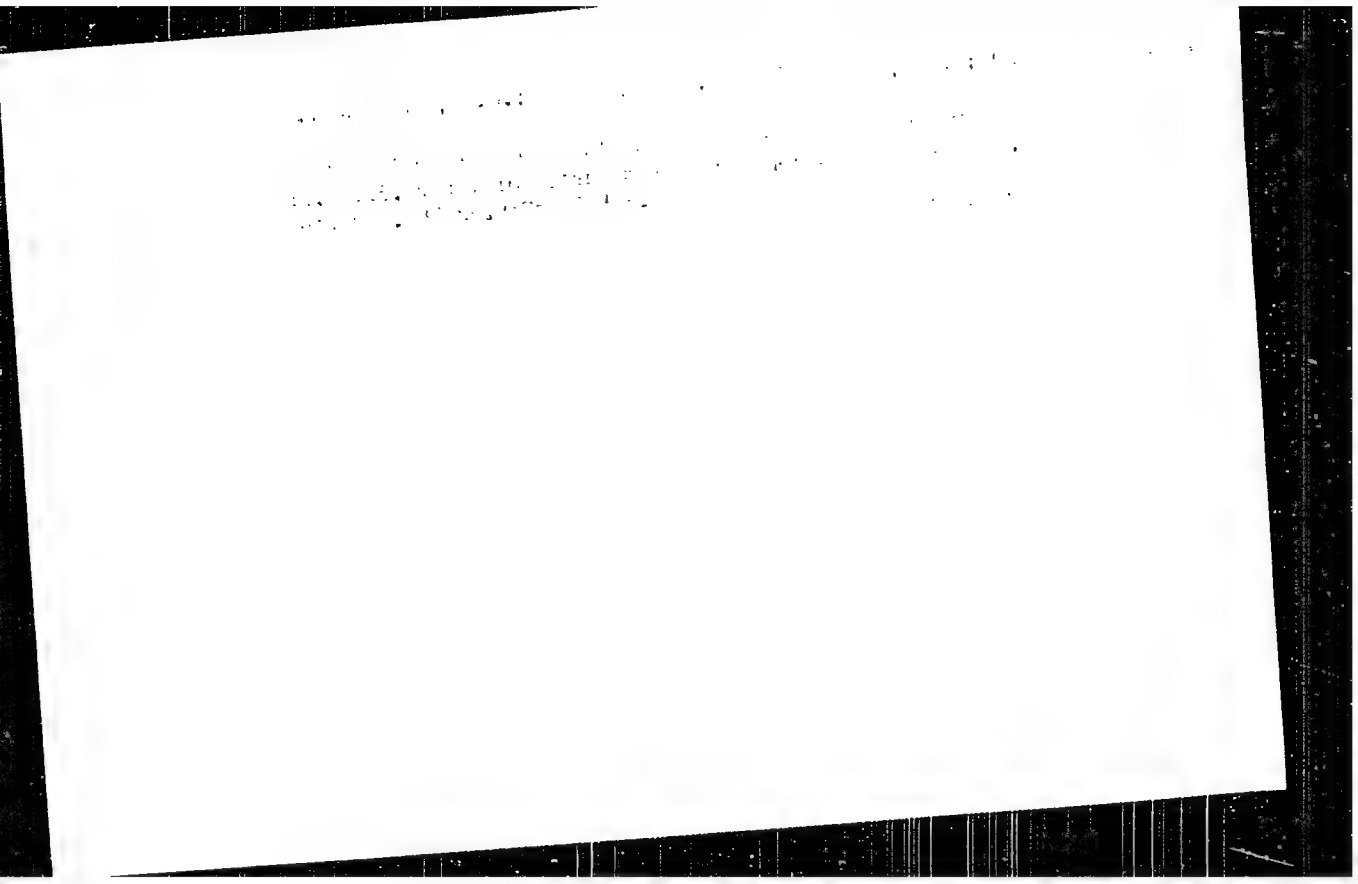
TITLE: Effect of heat treatment and cladding on the strength of VT14, VT15, and VT16 titanium alloys in biaxial tension

SOURCE: Tsvetnyye metally, no. 9, 1965, 75-79

TOPIC TAGS: titanium alloy, titanium clad alloy, alloy burst strength, alloy property, VT14 alloy, VT15 alloy, VT16 alloy

ABSTRACT: Specimens of variously heat treated VT14, VT15, and VT16 titanium alloys, some of them clad with VT1-4 titanium, were tested under conditions of biaxial tension. Sheet specimens 210 x 210 x 0.8 mm were fully annealed, formed into spherical segments 9—20 mm high, heat treated (annealed or annealed, water quenched, and aged), and subjected to burst tests. It was found that the burst strength of all the alloys tested is higher than the tensile strength. The highest burst strength, 180 kg/mm^2, was exhibited by titanium-clad VT15 alloy annealed at 800C,

Card 1/2



L 23000-66 EWT(m)/EWP(w)/T/EWP(t) IJP(c) JD/JG

ACC NR: AP6012144 SOURCE CODE: UR/0413/66/000/007/0060/0060

INVENTOR: Moiseyev, V. N.; Glazunov, S. G.; Mikhaylov, B. M.; Metelkin, V. Ye.

ORG: none

TITLE: A titanium-base alloy. Class 40, No. 180351

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 7, 1966, 60

TOPIC TAGS: titanium alloy, aluminum containing alloy, molybdenum containing alloy, vanadium containing alloy, chromium containing alloy, iron containing alloy

ABSTRACT: This Author Certificate introduces a titanium-base alloy containing aluminum, molybdenum, vanadium, and chromium. To improve the mechenical properties, the alloy has the following chemical composition: 2—6% aluminum, 6—9% molybdenum, 1—3% vanadium, 0.5—2% chromium, 0—5% iron, and the rest titanium. [WW]

SUB CODE: 11/ SUBM DATE: 06Jan65/ ATD PRESS: 4238

Card 1/1

L 23619-66 EWT(d)/EWT(m)/EWA(d)/EWP(t)/EWP(l) IJP(c) BB/JD/GG

ACC NR: AP6005331 (A) SOURCE CODE: UR/0413/66/000/001/0068/0068

INVENTOR: Glotov, V. G.

ORG: none

TITLE: Ferrite material. Class 21, No. 177563

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 1, 1966, 68

TOPIC TAGS: ferrite, memory cell, memory

ABSTRACT: An Author Certificate has been issued for a ferrite material with MgO, MnO, Fe_2O_3 for memory cells. To reduce remagnetization time and lower the annealing temperature, an additive of V_2O_5 or V_2O_5 + MoO_3 amounting to 5 -- 15 wt % is suggested. [LD]

SUB CODE: 11/ SUBM DATE: 30Dec64

Card 1/1 UDC: 621.318.134

L 29950-66 EWP(k)/EWT(m)/T/EWP(w)/EWP(t)/ETI IJP(c) JD/HW/WB

ACC NR: AP6017298 (A) SOURCE CODE: UR/0136/66/000/005/0080/0082

AUTHOR: Glazunov, S. G.; Moiseyev, V. N.; Mikhaylov, B. M.

ORG: none

TITLE: Heat-resistant titanium-clad titanium alloys

SOURCE: Tsvetnyye metally, no. 5, 1966, 80-82

TOPIC TAGS: titanium alloy, alloy cladding, titanium clad alloy, alloy property

ABSTRACT: Heat-resistant titanium alloys are susceptible to cracking during hot and warm rolling due to the insufficient plasticity of the metal at rolling temperatures. An attempt has been made to improve the plasticity by cladding with unalloyed titanium. Two alloys, OT4-2 (6.5% aluminum, 1.5% manganese) and an imported alloy (8% aluminum, 1% molybdenum, 1% vanadium) were clad by pack rolling. Cladding made it possible to lower the temperature of heat rolling to 1050C, which considerably reduced the effect of oxidation. Final rolling to a thickness of 2 mm was done at 750—550C. Cladding was found to lower somewhat the tensile and yield strengths but to increase the ductility. For example: clad OT4-2 alloy sheets had a yield strength of 88.8—91.2 kg/mm^2, a tensile strength of 95.0—97.3 kg/mm^2 and an elongation of 22.5—24.5% compared to 93.4—95.6 kg/mm^2, 103.7—105.5 kg/mm^2, and 12.8—14.6 for unclad sheets. As the test temperature was increased, the difference became less pronounced. The ductility of unclad specimens was greatly reduced when sheets were

UDC: 669.295:621.771.8

Card 1/2

L 29950-66

ACC NR: AP6017298 O

exposed to temperatures of 400—500C for 100 hr, while the ductility of clad specimens remained almost unaffected. Cladding also greatly improved the formability and weldability of both alloys. No separation of cladding from the base material was observed during any of the tests. Orig. art. has: 3 tables and 2 figures. [FM]

SUB CODE: 11, 13/ SUBM DATE: none/ ATD PRESS: 5611

Card 2/2 UC

L 29423-66 EWT(m)/EWP(t)/ETI IJP(c) JD

ACC NR: AP6017980 (A) SOURCE CODE: UR/0413/66/000/010/0082/0082

INVENTOR: Moiseyev, V. N.; Glazunov, S. G.; Geras'kova, L. V.

ORG: none

TITLE: A method of heat treatment of β-titanium alloy. Class 40, No. 181822

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 10, 1966, 82

TOPIC TAGS: titanium alloy, beta alloy, alloy heat treatment/ VT 15 titanium alloy

ABSTRACT: This Author Certificate introduces a method for heat treatment of β-titanium alloys, such as VT-15 alloy. To improve ductility and preserve high strength, the alloy is annealed at 620—740C, quenched, and then artificially aged. [AZ]

SUB CODE: 11, 13/ SUBM DATE: 24Jun64/ ATD PRESS: 5110

Card 1/1 UDC: 621.785.6+621.785.784:669.295:5

L 27511-66 EWT(m)/EWP(w)/EWA(d)/T/EWP(t)/ETI IJP(c) JD/JG/GS/JH
ACC NR: AT6012374 SOURCE CODE: UR/0000/65/000/000/0089/0091

AUTHORS: Ageyev, N. V.; Glazunov, S. G.; Petrova, L. A.; Tarasenko, G. N.; Grankova, L. P.

ORG: none

TITLE: Investigation of alloys of the system Ti--Mo--Cr--Fe--Al

SOURCE: Soveshchaniye po metallokhimii, metallovedeniyu i primeneniyu titana i yego splavov, 6th. Novyye issledovaniya titanovykh splavov (New research on titanium alloys); trudy soveshchaniya. Moscow, Izd-vo Nauka, 1965, 89-91

TOPIC TAGS: titanium, iron, chromium, molybdenum, aluminum, titanium alloy, metal aging, annealing, hardness, x ray spectrum

ABSTRACT: The effect of annealing and aging on the hardness and x-ray spectra of alloys derived from the system Ti--Mo--Cr--Fe--Al was studied. The experimental procedure was described earlier by N. V. Ageyev, and L. A. Petrova (Dokl. AN SSSR, 1961, 138, No. 2, 359). Five different alloy compositions were studied, and the experimental results are presented graphically (see Fig. 1). Photographs of polished sections of the alloys annealed at different temperatures and aged for different periods of time are presented. The presence of satellite lines in the x-ray spectrograms are noted, but the authors refrain from giving an explanation for their presence. It is concluded that the alloys may prove interesting as low-alloy β-stabilizing high-strength titanium alloys.

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L 27511-66

ACC NR: AT6012374

C

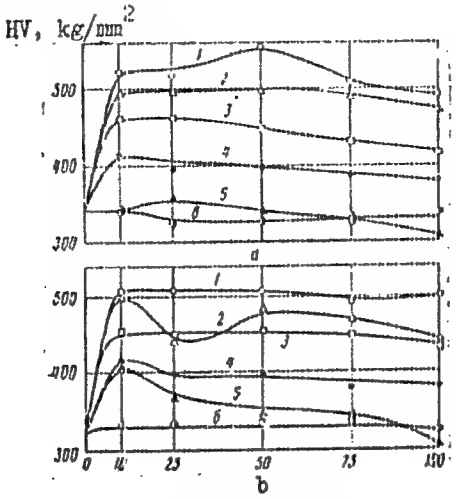

Fig. 1. Hardness of alloys as a function of the temperature and duration of aging. Aging temperature in C: 1 - 350; 2 - 400; 3 - 450; 4 - 500; 5 - 550; 6 - 600. (a) alloy 1T (2.9% Fe; 5.35 Cr; 1.47 Mo, 2.53 Al; 0.020 C; and 0.025 N); (b) alloy 5T (3.01% Fe; 7.7 Cr; 0.7 Mo; 1.2 Al; 0.016 C; and 0.021 N).

Orig. art. has: 1 table and 5 figures.

Card 2/2 BLG SUB CODE: 11/ SUBM DATE: 02Dec65/ ORIG REF: 004

ACC NR: AP6019769 SOURCE CODE: UR/0370/66/000/003/0125/0129

AUTHOR: Kishkin, S. T. (Moscow); Glazunov, S. G. (Moscow); Khorev, A. I. (Moscow); Rubin, Yu. L. (Moscow); Shilina, E. M. (Moscow)

ORG: none

TITLE: The use of high-temperature thermomechanical treatment in the manufacture of extruded BT-15 titanium alloy tubes

SOURCE: AN SSSR. Izvestiya. Metally, no. 3, 1966, 125-129

TOPIC TAGS: titanium alloy, alloy tube, tube heat treatment, thermomechanical treatment, high temperature treatment, aluminum containing alloy, chromium containing alloy/VT15 alloy

ABSTRACT: Vacuum-arc melted ingots of VT15 titanium-base alloy (2.99—3.6% Al, 10.7—11.1% Cr) were conditioned by machining and extruded into bars 187 mm in diameter. The bars were cut into tube billets which were pierced, conditioned and extruded at 950—1150C into tubes with an outside diameter of 110 mm and a wall thickness of 10 mm. Part of the extruded tubes were air cooled and then subjected to conventional heat treatment (annealing at 800C followed by water quenching); another part was subjected to high temperature thermomechanical treatment (ВТМТ), i.e., were water quenched immediately after extrusion. Both tube lots were then

UDC: 669.295.5-157.9

Card 1/1

ACC NR: AP6019769

double aged at 450C for 25 or 50 hr and at 560C for 15 min. The tubes which underwent HTMT had considerably better mechanical properties, tensile strength of 136—148 kg/mm^2, elongation of 6—12%, and reduction of area of 12—24% than the conventionally heat treated tubes, tensile strength of 116—132 kg/mm^2, elongation of 1—6% and reduction of area 2—12%. The beneficial effect of HTMT is believed to be associated with improved properties of grain boundaries, the rapid cooling immediately after extrusion prevents the diffusion of impurities to grain boundaries. Also the α-phase particles precipitated during aging in alloy subjected to HTMT are much finer and more uniformly distributed than those in conventionally heat treated alloy. Orig. art. has: 2 figures and 1 table. [DV]

SUB CODE: 13, 11/ SUBM DATE: none

Card 2/2

L 29192-66 EWT(m)/EWP(w)/T/EWP(t)/ETI/EWP(k) IJP(c) JD/HW/JG

ACC NR: AP6016583 (A) SOURCE CODE: UR/0129/65/000/005/0012/0014

AUTHOR: Ageyev, N. V.; Glazunov, S. G.; Petrova, L. A.; Tarasenko, G. N.; Grankova, L. P.; Shelest, A. Ye.

ORG: none

TITLE: High-temperature thermomechanical treatment of β-alloy of the Ti-Mo-Cr-Fe-Al system

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 5, 1966, 12-14

TOPIC TAGS: thermomechanical treatment, titanium alloy, titanium beta alloy, molybdenum containing alloy, iron containing alloy, aluminum containing alloy, alloy thermomechanical treatment, alloy mechanical property, alloy structure

ABSTRACT: Forged specimens of complex titanium-base alloy containing 7%Mo, 5.5%Cr, 3%Fe, and 3%Al were subjected to high-temperature thermomechanical treatment (HTMT), rolled at 850, 950, and 1050C with a 20, 40, and 60% reduction in one pass and 80% in two passes, immediately water quenched, and then aged at 450C for 15 and 25 hr, at 500C for 5 and 10 hr, or at 525C for 5 hr. HTMT increased alloy strength without affecting ductility. For example, prior to aging the tensile strength of alloy hot rolled at 950C with a reduction of 20, 40, 60, and 80% was 96.5, 105.0, 96.7, and 99.5 kg/mm^2, respectively, compared with 77.3 kg/mm^2 for alloy quenched from the same temperature without deformation. The corresponding figures for elongation were

Card 1/2 UDC: 295:621.771:621.735.61'74

L 29192-66

ACC NR: AP6016583 2

16.6, 18.4, 17.7, and 18%, respectively, compared with 16.9%. The increased strength of the alloy after HTMT is explained by strain hardening and fragmentation of the β-alloy grains. Aging produced a further significant increase of strength. The best combination of strength and ductility was obtained after HTMT with 60—80% reduction at 850C and aging at 500C for 10 hr or 525C for 5 hr, after which the alloy had a tensile strength of 164—177 kg/mm^2, an elongation of 4.5—9.0%, and a reduction of area of 8—15%. This effect of aging was found to result from the precipitation of the finely dispersed α-phase. Orig. art. has: 3 figures and 1 table. [MS]

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 008/ ATD PRESS: 5804

Card 2/2 BLG

L 40159-66 EWT(m)/EWP(w)/T/EWP(t)/ETI IJP(c) WW/JD/JG

ACC NR: AP6023619 (N) SOURCE CODE: UR/0136/66/000/007/0086/0088

AUTHOR: Khorev, A. I.; Glazunov, S. G.; Mukhina, L. G.

ORG: none

TITLE: Effect of modifying additions on properties of titanium alloy

SOURCE: Tsvetnyye metally, no. 7, 1966, 86-88

TOPIC TAGS: titanium, titanium alloy, aluminum containing alloy, molybdenum containing alloy, chromium containing alloy, zirconium containing alloy, rhenium containing alloy, alloy property, alloy weld, weld property/VT14 titanium alloy, VT15 titanium alloy, VT16 titanium alloy, durability, ductility, weld evaluation,

ABSTRACT: The effect of small additions of rhenium (0.001—0.2%) or zirconium (0.01—1.0%) on the structure and properties of VT14, VT15, and VT16 titanium alloys was investigated with alloy sheet specimens 1.2 mm thick. It was found that for the VT14 alloy the optimal zirconium content is 0.02—0.1%. At this content the strength increased by 5—10 kg/mm^2, ductility remained unchanged and the weld ductility increased by 30—50%. The effect of rhenium was roughly the same as that of zirconium. In the VT16 alloy, 0.01—0.02% zirconium slightly increased ductility without affecting strength; 0.1% Zr considerably increased weld ductility (from 45° bend angle to 100°), but lowered the weld strength. At 0.05% zirconium the weld had a higher ductility than the base metal. 0.01 Re increased ductility but lowered the

Card 1/2 UDC: 669.295.018.298

L 40139-66
ACC NR: AP6023619

strength of the VT16 alloy from 92 to 88 kg/mm^2. Re at contents from 0.02 to 0.05% improved weld ductility, i.e., increased the bend angle from 45° to 65°. The weld ductility increased with the increase of rhenium content up to 0.1%. In the VT15 alloy, 0.5% zirconium increased ductility, especially of an aged alloy. At 0.5—1.0% zirconium, the VT15 alloy weld had the highest ductility, a bend angle of 100—120°. The addition of up to 0.2% Re had little or no effect on the properties of VT15 alloy, only elongation of the annealed alloy increased from 17 to 19.5% at 0.05% Re. Orig. art. has: 3 figures. [ND]

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 001/ ATD PRESS: 5049

Card 2/2

ACC NR: [illegible]

INVENTOR: [illegible]

ORG: none

TITLE: Weldable wrought titanium alloy. [illegible]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. [illegible]

TOPIC TAGS: titanium alloy, molybdenum containing alloy, aluminum containing alloy, niobium containing alloy, heat resistant alloy

ABSTRACT: This Author Certificate introduces a weldable wrought titanium-base alloy with improved heat resistance containing 25—30% molybdenum, 0.1—3.0% aluminum, and 2—5% niobium. [AZ]

SUB CODE: 11/ SUBM DATE: 09May64/ ATD PRESS: 5036

Card 1/1

L 47365-66 EWT(m)/EWP(w)/T/EWP(t)/ETI IJP(c) JD/WB/WB
ACC NR: AR6023111 SOURCE CODE: UR/0137/66/000/005/I083/I083

AUTHOR: Glukhova, A. I.; Andreyeva, V. V.; Glazunov, S. G.; Solonina, O. P.

TITLE: Investigation of the corrosion resistance and electrochemical and mechanical properties of alloys of the system niobium and titanium

SOURCE: Ref. zh. Metallurgiya, Abs. 5I575

REF SOURCE: Sb. Korroziya met. i splavov. No. 2. M., Metallurgiya, 1965, 29-42

TOPIC TAGS: niobium alloy, titanium niobium alloy, corrosion resistance

ABSTRACT: Niobium alloys with 2—40% titanium have high corrosion resistance in solutions of mineral acids at a temperature of 40C. An increase in titanium content decreases corrosion resistance. Maximum corrosion is observed in acid media at an energy potential of 100 mv. Formation of a hybrid layer and embrittlement of Me occurs at more negative potentials due to diffusion of H in Me. [Translation of abstract] [NT]

SUB CODE: 11/

UDC: 669.293.5

Card 1/1 afs

L 47367-66 EWT(m) FWP; WT EWP(ETI SOURCE CODE: UR/0137/66/000/005/I085/I085
ACC NR: AR6028[illegible]

AUTHOR: Andreyeva, V. V.; Kazarin, V. I.; Alekseyeva, Ye. L.; Glazunov, S. G.; Nikulova, V. F.; Solonina, O. P.

TITLE: Investigation of the corrosion resistence and electrochemical and mechanical properties of alloys of the system niobium and titanium

SOURCE: Ref. zh. Metallurgiya, Abs. 51590

REF SOURCE: Sb. Korroziya met. i splavov. No. 2. M., Metallurgiya, 1965, 43-58

TOPIC TAGS: niobium titanium alloy, corrosion resistance/Ti20Nb alloy

ABSTRACT: Titanium alloys with 2--50% niobium have been investigated. Alloying of titanium with niobium considerably increases σ_B and H_B of Ti. Thus, after hot forging the Ti-20Nb alloy has σ_B of ~154 Mn/m^2 (Ti 69 ran/m^2), $\delta \sim 11\%$ (Ti ~18%). The corrosion resistance of alloys in solutions of unoxidative acids is considerably higher than that of titanium. In such acids as HNO_3, the resistance of titanium and titanium-niobium is identical. The critical density of passivating current decreases with an increase of niobium content in

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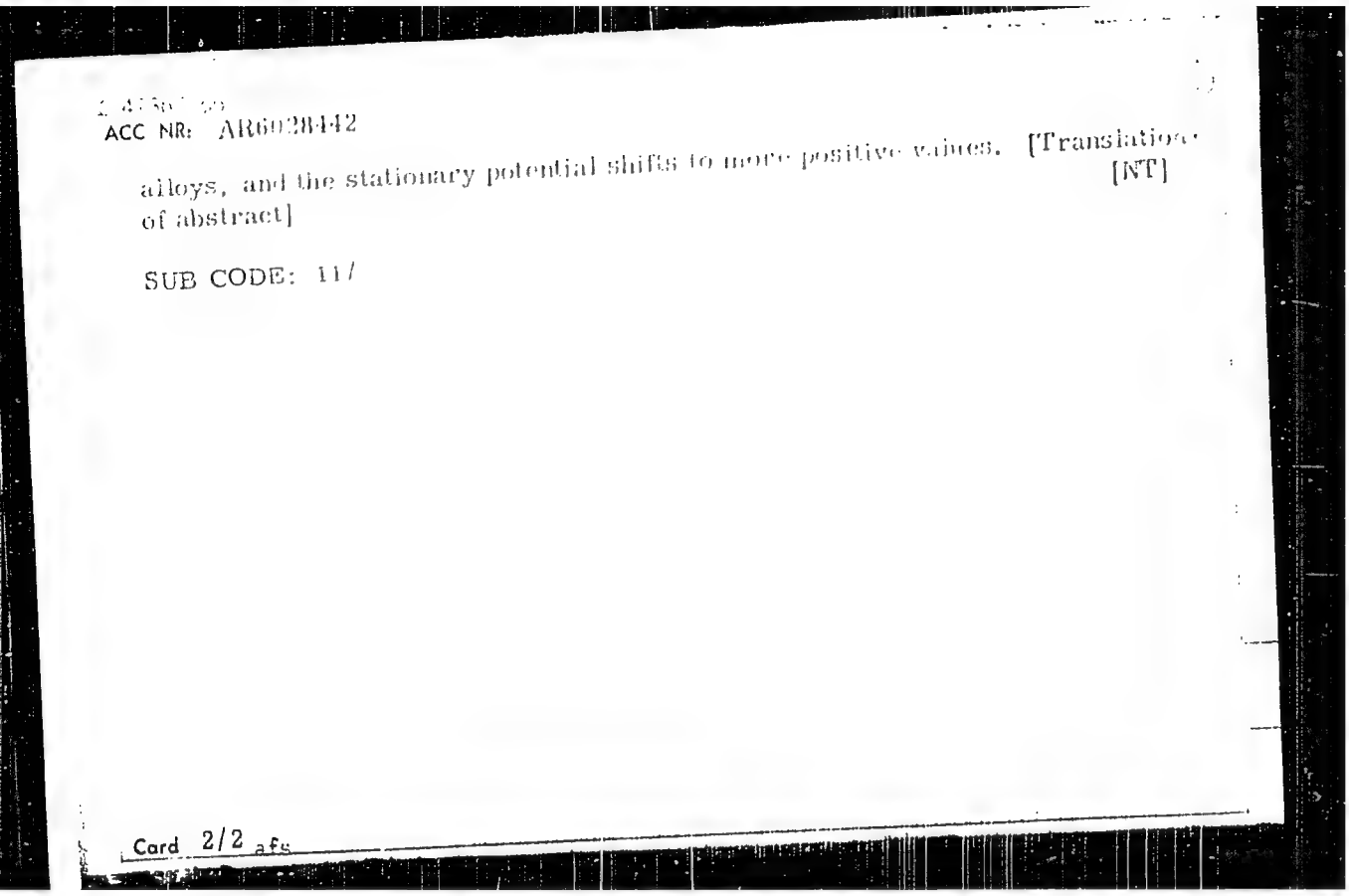


ACC NR: AR6028442

alloys, and the stationary potential shifts to more positive values. [Translation of abstract] [NT]

SUB CODE: 11/

Card 2/2 afs

L 44354-66 EWT(m)/EWP(t)/ETI/EWP(k) IJP(c) JD/HW/JG

ACC NR: AP6019834 (N) SOURCE CODE: UR/0370/66/000/001/0139/0148

AUTHOR: Ageyev, N. V. (Moscow); Glazunov, S. G. (Moscow); Petrova, L. A. (Moscow); Tarasenko, G. N. (Moscow); Grankova, L. P. (Moscow)

ORG: none

TITLE: Investigation of metastable β-alloys of the Ti-Mo-Fe-Al system

SOURCE: AN SSSR. Izvestiya. Metally, no. 1, 1966, 139-148

TOPIC TAGS: phase analysis, quaternary alloy, titanium base alloy, molybdenum, iron, aluminum, metal aging, mechanical property

ABSTRACT: This is a continuation of previous investigations (Ageyev, N. V., Rogachevskaya, Z. M. Zh. neorgan. khimii, 1959, IV, vyp. 10, 2323-2328; Ageyev, N. V., Grankova, L. P., Novik, P. K. Dokl. AN SSSR, 1962, 146, no. 2, 351-354) with the difference that it deals with Ti-Mo-Fe-Al alloys which quench to the β-solid solution, i.e. have an electron concentration of more than 4.20 el/at, but contain not more than 8.5% Fe and 8% Mo as well as 2.3 and 4% Al, and hence are of greater practical interest. Ingots of these alloys were melted by using a mixture of titanium sponge, Al-Mo master alloy, pure Al and armco iron. The ingots,

UDC: 669.295

Card 1/2

L 44354-66

ACC NR: AP6019834

weighing 400 g, were lathe-turned and subsequently hot-forged in an electric furnace at 1000-1100°C into rods of 15 mm diameter and squares measuring 15x15 mm. The forged alloys were annealed at 750 and 800°C for 1 hr and water-quenched. All the alloys quenched from 750°C had the $\beta + \alpha$ phase structures, and all those quenched from 800°C, the structure of the β-solid solution, as was to be expected from their electron concentration. The forgings were milled in a milling machine and cut up into specimens for microstructural and radiographic examination as well as for tests of hardness and tensile strength. Measurements of the Vickers hardness of these alloys as a function of aging temperature (200-600°C) and time (1-100 hr) revealed that for most of the alloys hardness reaches its maximum (~500 kg/mm) after 10-25 hr at any aging temperature within the limits considered and thereafter remains virtually constant for 100 hr. β-alloys containing 2% Al, when heated to 400-500°C, undergo decomposition with segregation of ω-phase which gets transformed into α-phase after 10 hr. β-alloys containing 3 and 4% Al undergo decomposition with segregation of α-phase. Of the alloys of Ti + 7% Mo + 6% Fe + 2, 3 and 4% Al the best mechanical properties (tensile strength 160 kg/mm^2, plasticity 7.0%) were displayed by the alloy with 3% Al aged at 525°C for 20 hr and subsequently cooled in air. Orig. art. has: 7 figures, 3 tables.

SUB CODE: 11, 13/ SUBM DATE: 02Mar65/ ORIG REF: 005/

Card 2/2 blg

L 46770-66 EWT(m)/EWP(k)/T/EWP(t)/ETI IJP(c) JD/HW

ACC NR: AP6031730 SOURCE CODE: UR/0136/66/000/009/0092/0093

AUTHOR: Khorev, A. I.; Glazunov, S. G.; Gruzdeva, L. A.

ORG: none

TITLE: Effect of low-temperature thermomechanical treatment on the structure and properties of titanium alloys

SOURCE: Tsvetnyye metally, no. 9, 1966, 92-93

TOPIC TAGS: titanium alloy, alloy, thermomechanical treatment, low temperature thermomechanical treatment, alloy structure, solid mechanical property/VT14 alloy, VT15 alloy

ABSTRACT: VT14 and VT15 titanium alloy sheets 1.5 and 2.0 mm thick were solution annealed at 680—880C, quenched, and cold rolled to a thickness of 1.2 mm with a reduction of 20 and 40%, respectively. All sheets were then aged at 420—560C. The dependence of the mechanical properties on low-temperature thermomechanical treatment (LTMO) of VT14 and VT15 alloys is shown in Fig. 1. The total strengthening of VT14 alloy was the combined result of strain hardening and phase transformation. Straining VT14 alloy prior to aging also decreased the alloy grain size. A 20% reduction before aging did not change the VT15 alloy grain shape, but 40% reduction almost obliterated the grain boundaries. By applying LTMO, high-strength sheets, wire or cold-drawn and cold-rolled tubes, as well as finished articles can readily

UDC: 669.293:620.1

Card 1/2

L 46770-66

ACC NR: AP6031730

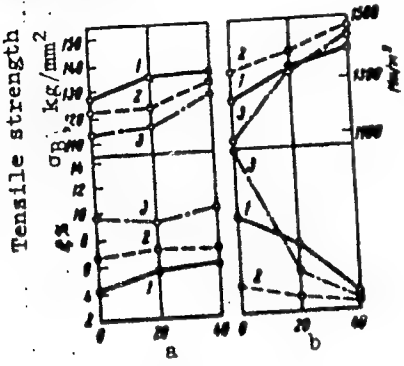


Fig. 1. Dependence of the mechanical properties of VT14 (a) and VT15 (б) alloys on thermomechanical treatment.

Alloy	Curve	Quenching	Aging
VT14	1	880°C	480°C, 16 hr
	2	850°C	480°C, 16 "
	3	870°C	570°C, 16 "
VT15	1	850°C	480°C, 8 hr + 500°C, 16 min
	2	880°C	480°C, 16 hr + 500°C, 16 min
	3	880°C	480°C, 16 hr + 500°C, 16 min

be made from hardened VT14 and VT15 alloys. The semiproducts can be strengthened by subsequent aging. Orig. art. has: 2 figures. [MS]

SUB CODE: 13/ SUBM DATE: none/ ATD PRESS: 5091

Card 2/2 hs

L [illegible]-67 EWT(m)/EWP(t)/ETI/EWP(k) JD
ACC NR: AP6015717 (N) SOURCE CODE: UR/0413/66/000/019/0073/0073

INVENTOR: Glazunov, S. G.; Zhikharev, I. A.; Khrustsevich, L. A.; Khromov, A. M.; Yershov, Yu. V.; Yasinskiy, K. K.; Zubova, K. A.

ORG: none

TITLE: Melting-pouring unit. Class 31, No. 186647

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 19, 1966, 73

TOPIC TAGS: active metal, metal casting, metal vacuum melting, centrifugal casting, casting unit, vacuum casting unit

ABSTRACT: This Author Certificate introduces a melting-casting unit for centrifugal casting of reactive metals. The unit consists of a vacuum chamber which contains a centrifuge with a vertical axis of rotation. The melting crucible is mounted in the center of the centrifuge; the molds are on the periphery. To ensure continuous pouring of metal without extinguishing the arc and tilting the crucible, the latter is provided with side openings connected with an annular collector installed between the molds and the crucible.

SUB CODE: 13/ SUBM DATE: 28Dec64/ ATD PRESS: 5105

Card 1/1 UDC: 621.745.552, .042.002.51

ACC NR: AP6035881 SOURCE CODE: UR/0413/66/000/020/0123/0123

INVENTOR: Moiseyev, V. N.; Glazunov, S. G.; Gerasimova, L. V.; Paganovich, I. N.

ORG: none

TITLE: Titanium-base alloy. Class 40, No. 187309

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 20, 1966, 123

TOPIC TAGS: titanium aluminum alloy, manganese containing alloy, zirconium containing alloy

ABSTRACT: This Author Certificate introduces a titanium-base alloy containing aluminum and manganese. To improve alloy ductility and weldability, its composition is as follows: 0.1—1.5% aluminum, 0.1—1.5% manganese, and 0.01—0.4% zirconium.

SUB CODE: 11/ SUBM DATE: 05Jun65/ ATD PRESS: 5106

UDC: 669.295.5'71'74'296

Card 1/1

ACC NR: AP7003006 (A,N) SOURCE CODE: UR/0413/66/000/024/0154/0154

INVENTOR: Poplavko-Mikhaylov, M.V.; Khorev, A.I.; Glazunov, S.G.; Gruzdeva, L.A.; Moiseyev, V.N.

ORG: none

TITLE: Titanium-base filler material for welding martensite-type heat-treatable titanium alloys. Class 21, No. 152372

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 24, 1966, 154

TOPIC TAGS: titanium alloy, ~~heat treatable alloy~~, alloy welding, filler ~~material~~, titanium base alloy, martensite, weld heat treatment

ABSTRACT:

This Author Certificate introduces a titanium-base filler metal for welding martensite-type heat-treatable titanium alloys. To increase the weld metal strength and ductility in the heat-treated condition, 2—4.5% Al is introduced into the filler metal. [NS]

SUB CODE: 11, 13/ SUBM DATE: 16Oct61/ ATD PRESS: 5114

Card 1/1 UDC: none

GLAZUNOV, S.

Reconditioning of V.I.Lenin's automobile. Za rul. 18 no.4:25-26 Ap '60. (MIRA 13:8)

1. Zamestitel' nachal'nika laboratorii eksperimental'nogo tsekha avtozavoda im.Likhacheva.
(Lenin, Vladimir Il'ich, 1870-1924)

GLAZUNOV, S.

Valves with forced closing. Avt. transp. 38 no. 5:61-62 My '60. (MIRA 14:2)

(Automobiles--Engines--Cylinders)

GLAZUNOV, S., inzh.

Helping technological development. Za rul. 20 no.1:8 Ja '62. (MIRA 15:2)

1. Nachal'nik laboratorii skorostnykh avtomobiley Moskovskogo avtozavoda im. Likhacheva.
(Automobiles, Racing)

GLAZUNOV, Sergey Ivanovich; SUKHNEV, A.I., retsenzent; SLEPENKOV, P.P., retsenzent; NIKIFOROV, N.M., red.; ALEKSEYEV, V.I., red. izd-va; YERMAKOVA, T.T., tekhn. red.

[Boatswains and seamen's manual for river passenger and freight vessels] Posobie botsmanu i matrosu gruzo-passazhirskogo rechnogo sudna. Mokva, Izd-vo "Rechnoi transport," 1958. 143 p.
(Ships) (MIRA 11:9)

CHUMAKOV, M.P.; MEZNIKOV, A.I.; DZAGUROV, S.G.; LUSHCHINSKAYA, Ye.V.; GLAZUNOV, S.L.; DUBNYAKOVA, A.M.; POVALISHINA, T.P.

Hemorrhagic fever with nephritic syndrome in the Upper Volga Basin. Vop.virus. 1 no.4:26-30 Jl-Ag '56. (MLRA 10:1)

1. Institut po izucheniyu poliomielita AMN SSSR, Moskva.
(EPIDEMIC HEMORRHAGIC FEVER, epidemiology, in Russia (Rus))

GLAZKOV, S. L.: Master Med Sci (diss) -- "Clinical characterization of hemorrhagic fever with a renal syndrome in Kalinin (blurred)". Gorkiy, 1957. 11 pp (Acad Med Sci USSR, Kuybyshev Medical Institute), 200 copies (KL, No 4, 1958, 130)

GLAZUNOV, S.L.; LESHCHINSKAYA, Ye.V.; DUBNYAKOVA, A.M.

Clinical characteristics of hemorrhagic fever with a kidney syndrome in Kalinin District. Klin. med. 35 no.1:80-85 Ja '57
(MLRA 10:4)

1. Iz Instituta po izucheniyu poliomiyelita AMN SSSR i rayonnoy bol'nitsy g. Kashina Kalininskoy oblasti.
(WEIL'S DISEASE, epidemiol.
clin. aspects & ther.)

VYSOTSKIY, N.N., prof.; GLAZUNOV, S.L., kand.med.nauk, zasluzhennyy vrach RSFSR

Treatment of cholecystitis at the Kashin Health Resort. Trudy KGMI no.10:47-52 '63. (MIRA 18:1)

1. Iz kurorta "Kashin" (glavnyy vrach Ya.M.Katsepin) i kafedry fakul'tetskoy terapii (zav. kafedroy - prof. N.N.Vysotskiy), Kalininskogo gosudarstvennogo meditsinskogo instituta.

GLAZUNOV, S.V.; PAPMEL', S.V., redaktor; MANINA, M.P., tekhnicheskiy redaktor.

[Sport cars; construction requirements] Sportivnye avtomobili; trebovaniia k konstruktsii. Moskva, Gos. izd-vo "Fizkul'tura i sport," 1954. 93 p. (MLRA 7:8)
(Automobiles--Design and construction)

GLAZUNOV, S.

Developments in the design of modern sport cars. Avt.transp. 33 no.12:23-24 D '55. (MLRA 9:3)

1. Nachal'nik laboratorii skorostnykh avtomobiley avtozavoda imeni Stalina.

(Sport cars)

GLAZUNOV, Sergey Vasil'yevich; PAPMEL', S.V., redaktor; SHALYGINA, G.A., tekhnicheskiy redaktor

[Testing sport cars; the finishing operations on the construction] Ispytanie sportivnykh avtomobilei; dovodka konstruktsii. Moskva, Gos. izd-vo "Fizkul'tura i sport," 1956. 118 p. (MLRA 9:12)
(Automobiles--Testing)

GLAZUNOV, Sergey Vasil'yevich; SABININ, Andrey Aleksandrovich; BAS, Lev Ruvimovich; PAPMEL', S.V., redaktor; MANINA, M.P., tekhnicheskiy redaktor

[Automobile and motorcycle racing in foreign countries] Avtomobil'-nye sorevnovaniia za rubezhom. Pod obshchei red. A.Sabinina. Moskva, Gos. izd-vo "Fizkul'tura i sport," 1956. 266 p. (MLRA 9:8)
(Motorcycle racing) (Automobile racing)

GLAZUNOV, Sergey Vasil'yevich; PAPMEL', S.V., redaktor; MANINA, M.P., tekhnicheskiy redaktor

[Sport cars; specifications for construction] Sportivnye avtomobili; trebovaniia k konstruktsii. Izd. 2-oe, ispr. i dopol. Moskva, Gos. izd-vo "Fizkul'tura i sport," 1957. 135 p. (MLRA 10:9)
(Automobiles--Design and construction)

GLAZUNOV, S., inzhener.

Racing cars. Za rul. 15 no.1:13-14 Ja '57. (MLRA 10:4)

1. Nachal'nik laboratorii skorostnykh avtomobiley ZIL.
(Automobiles, Racing)

GLAZUNOV, S.

Sports cars made at the Likhachev Plant. Avt. transp. 35 no.5:27-28 My '57. (MLRA 10:6)

1. Nachal'nik laboratorii skorostnykh avtomobiley Moskovskogo avtomobil'nogo zavoda imeni I.A. Likhacheva.
(Sports cars)

GLAZUNOV, S.

Plastic bodies of the ZIL sport automobiles. Avt.transp. 36 no.8:42-44 Ag '58. (MIRA 11:9)
(Automobiles, Plastic)

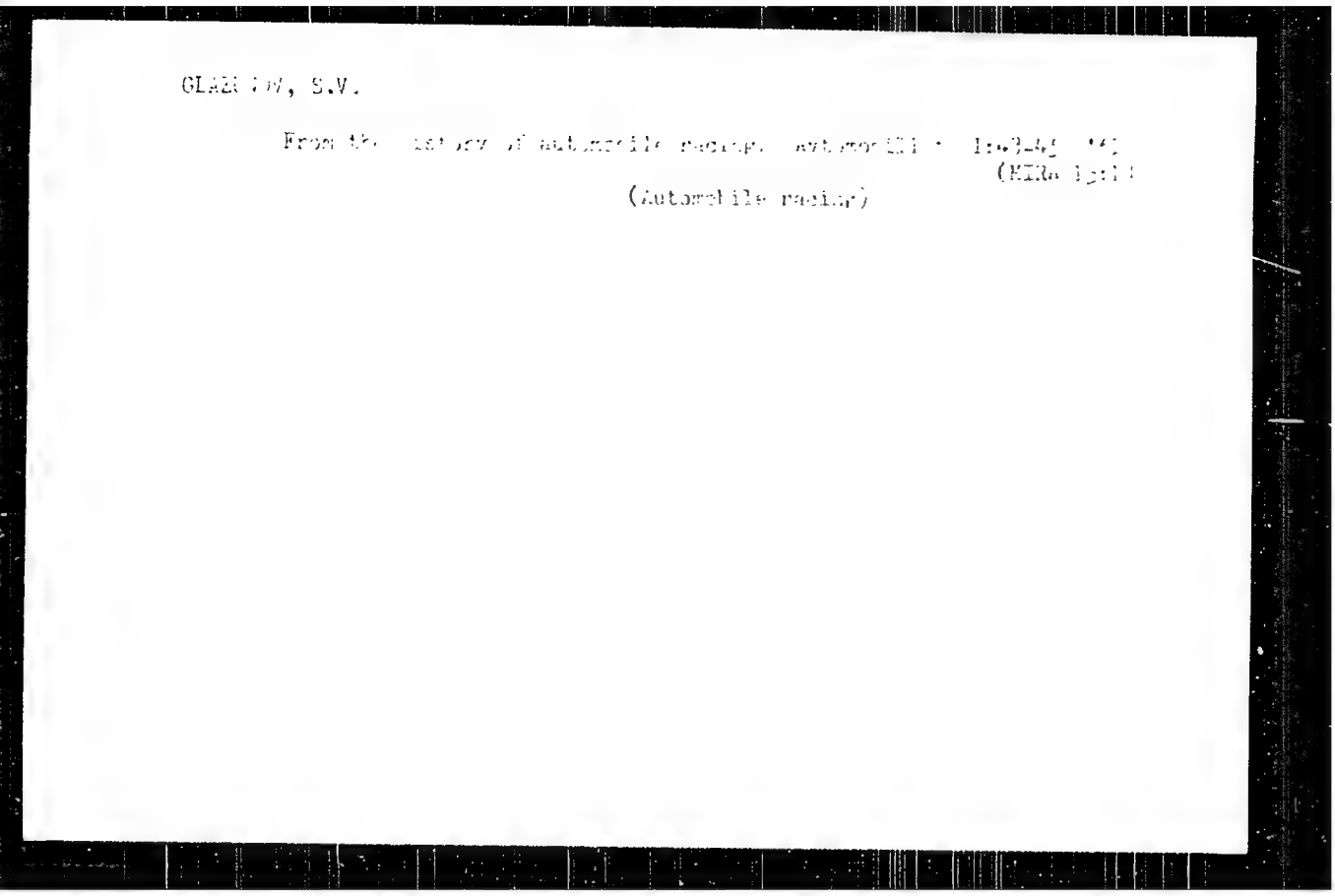
GLAZUNOV, S.

The "AEV" sport car. Avt. transp. 36 no.10:57-58 O '58.
(MIRA 13:1)
(Germany, East--Automobiles, Racing)

GLAZUNOV, S.

New high-speed ZIL automobiles. Avt. transp. 37 no.8:47-48 Ag '59.
(MIRA 12:12)

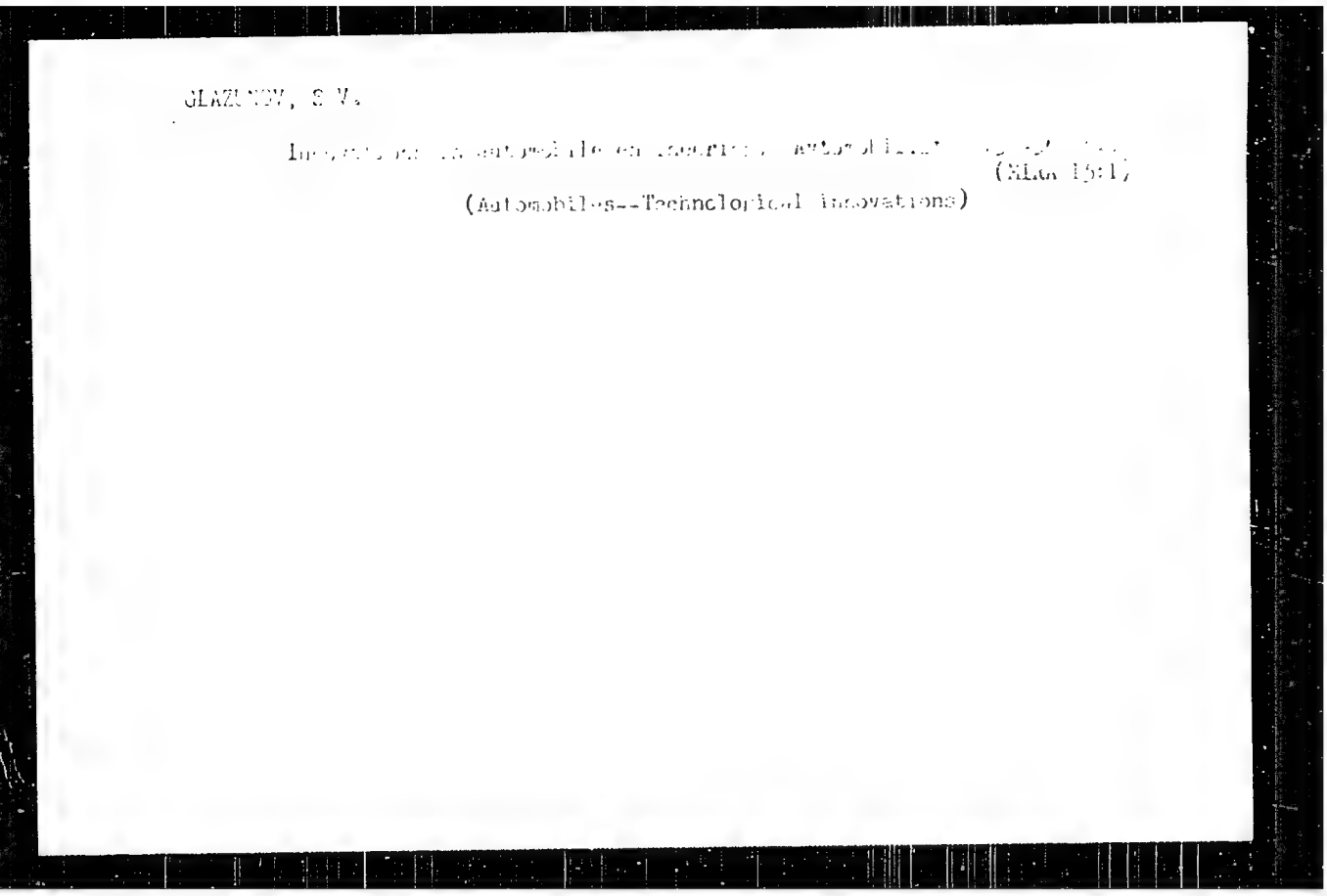
(Automobiles)



GLAZ[illegible]V, S.V.

From the history of automobile racing. Avtomobil' [illegible] (MIRA 13:1)

(Automobile racing)



GLAZUNOV, S. V.

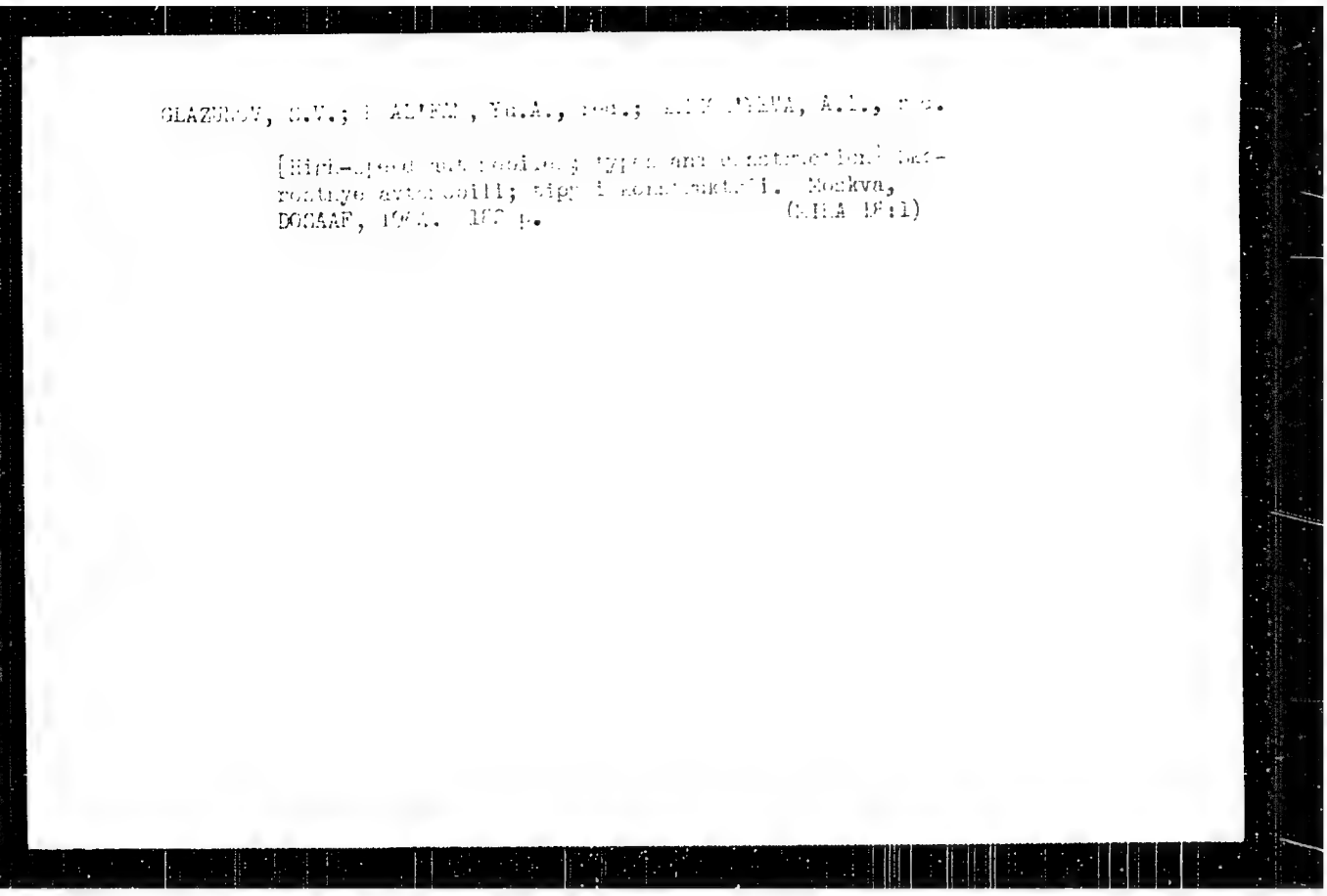
[illegible] (Mekh 15:1)

(Automobiles--Technological innovations)

GLAZUNOV, S., inzh.

Helping technological development. Za rul. 20 no.1:8 Ja '62. (MIRA 15:2)

1. Nachal'nik laboratorii skorostnykh avtomobiley Moskovskogo avtozavoda im. Likhacheva.
(Automobiles, Racing)



GLAZUNOV, G.V.; [illegible] Yu.A., red.; [illegible], A.L., red.

[High-speed motorcycles; their care and maintenance] Bystrokhodnye avtomotsikly; ikh ukhod i soderzhanie. Moskva, DOSAAF, 1964. 102 p. (MIRA 18:1)

report presented at the First Technical Conference on the Introduction of New Techniques into the Electrical Insulator Industry, 12-15 Mar 1958, State Sci. Tech. Committee of Council of Ministers of USSR.

GLAZUNOV, T.K., knad.fiz.-matem.nauk; YURCV, S.G., knad.tekhn.nauk

Role and tasks of the All-Union Lighting Engineering Institute.
Svetotekhnika 8 no.11:3-9 N'62. (MIRA 15:10)
(Electric lighting)

GLAZUNOV, V.A.

"Physical geography of the Caucasus: Lecture course, no.1." N.A.Grozdetskii. Reviewed by V.A.Glazunov. Izv. Vses. geog. ob-va 88 no.1:101-103 Ja-F '56. (101-103)
(Caucasus--Physical geography) (Grozdetskii, N.A.)

GLAZUNOV, V.A.

Current velocity and true direction recording elements of the "Vitiaz'" recorder. Trudy Inst. okean. 25:182-189 '59.
(MIRA 13:3)

(Ocean currents)

LISITSYN, A.P.; GLAZUNOV, V.A.

Design and use of the 200-liter bathometers. Trudy Inst. okean. 44:112-122 '60. (MIRA 14:2)

(Bathometer)

S/[illegible]/[illegible]/[illegible]/[illegible]/002/002
E075/E[illegible]

[illegible]

[illegible]: [illegible], [illegible], [illegible], V.I., [illegible], V.[illegible].

TITLE: [illegible] of transformer oil [illegible]

[illegible]: [illegible], [illegible], 1962, [illegible]

TEXT: [illegible] range 520 to 10[illegible] [illegible] 175 [illegible] (D-[illegible]) and 200 [illegible] (oil [illegible]-105 (D-105)) of [illegible] were subjected to [illegible] ethylketone/toluene [illegible] and chromatographic separation on silica gel. The contents of aromatic hydrocarbons and sulphur compound fractions were about [illegible], [illegible] and [illegible] for the distillate, oil D-[illegible]9 and oil D-105 respectively. Most of the aromatic fraction in the distillate was [illegible] by bicyclic aromatic hydrocarbons. The concentration of tricyclic and higher aromatics was not higher than [illegible] of the fraction. Sulphur contents of the aromatic fractions [illegible] from [illegible] to 7.[illegible]. There was no free sulphur, no H_2S and very little [illegible] sulphur. The fractions with refractive index smaller than 1.5623
Card 1/2

Composition and properties ... S/[illegible] [illegible]

had no sulphide sulphur. The [illegible] in the [illegible] oil [illegible] fractions. [illegible] activity of the fractions and their [illegible] was determined by [illegible] absorption in a closed system. It was found that the inhibiting action of the aromatic fractions of the distillate increases with their refractive index and reaches a maximum for the penultimate fraction. For the oils D-[illegible] and D-105, the last fraction had the strongest inhibiting action. In the latter oil, however, the last fraction was not such a good inhibitor as the fraction from oil D-89. There are 3 tables and 1 figures.

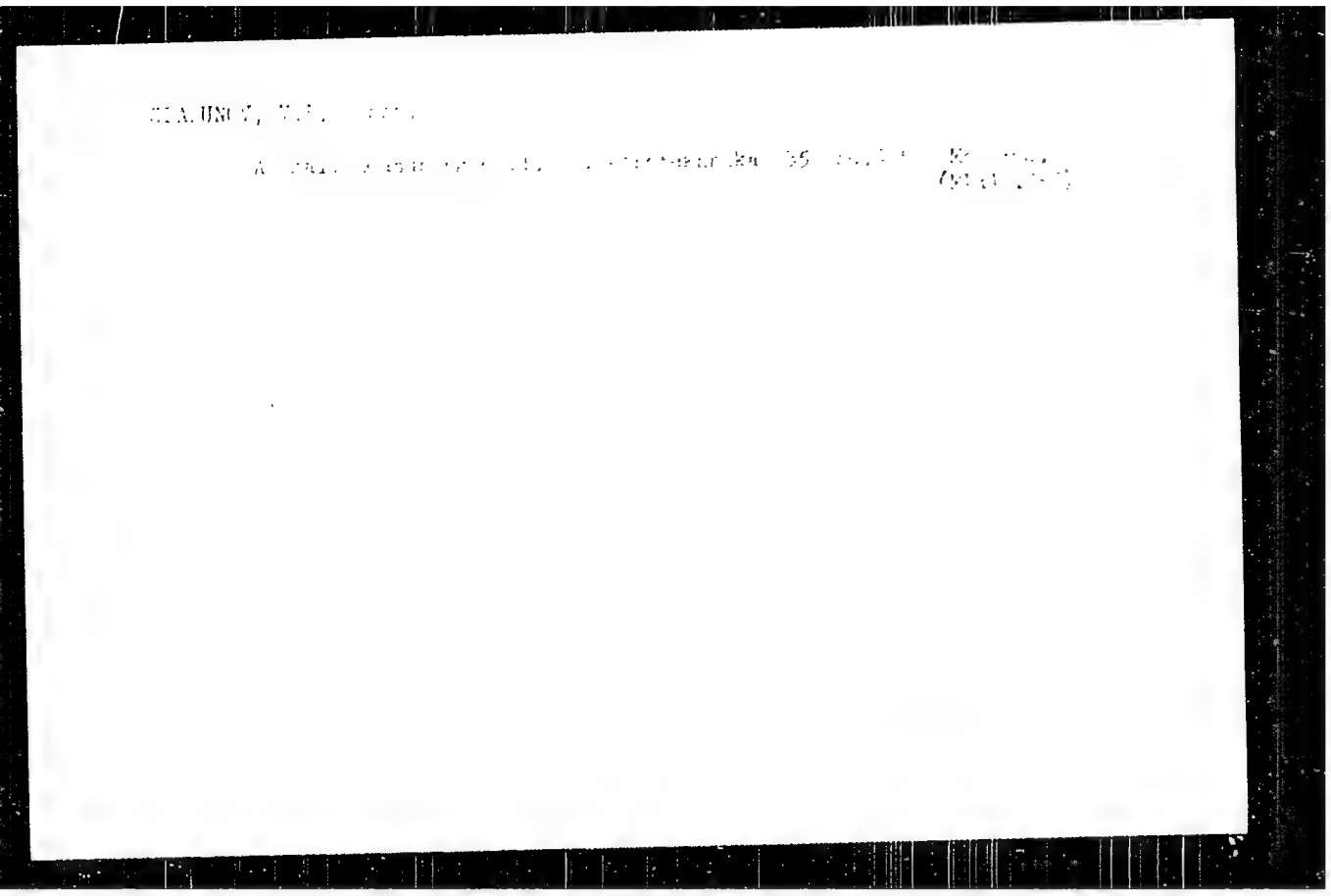
ASSOCIATION: Bash. filial AN SSSR (Bash. Branch AS USSR)

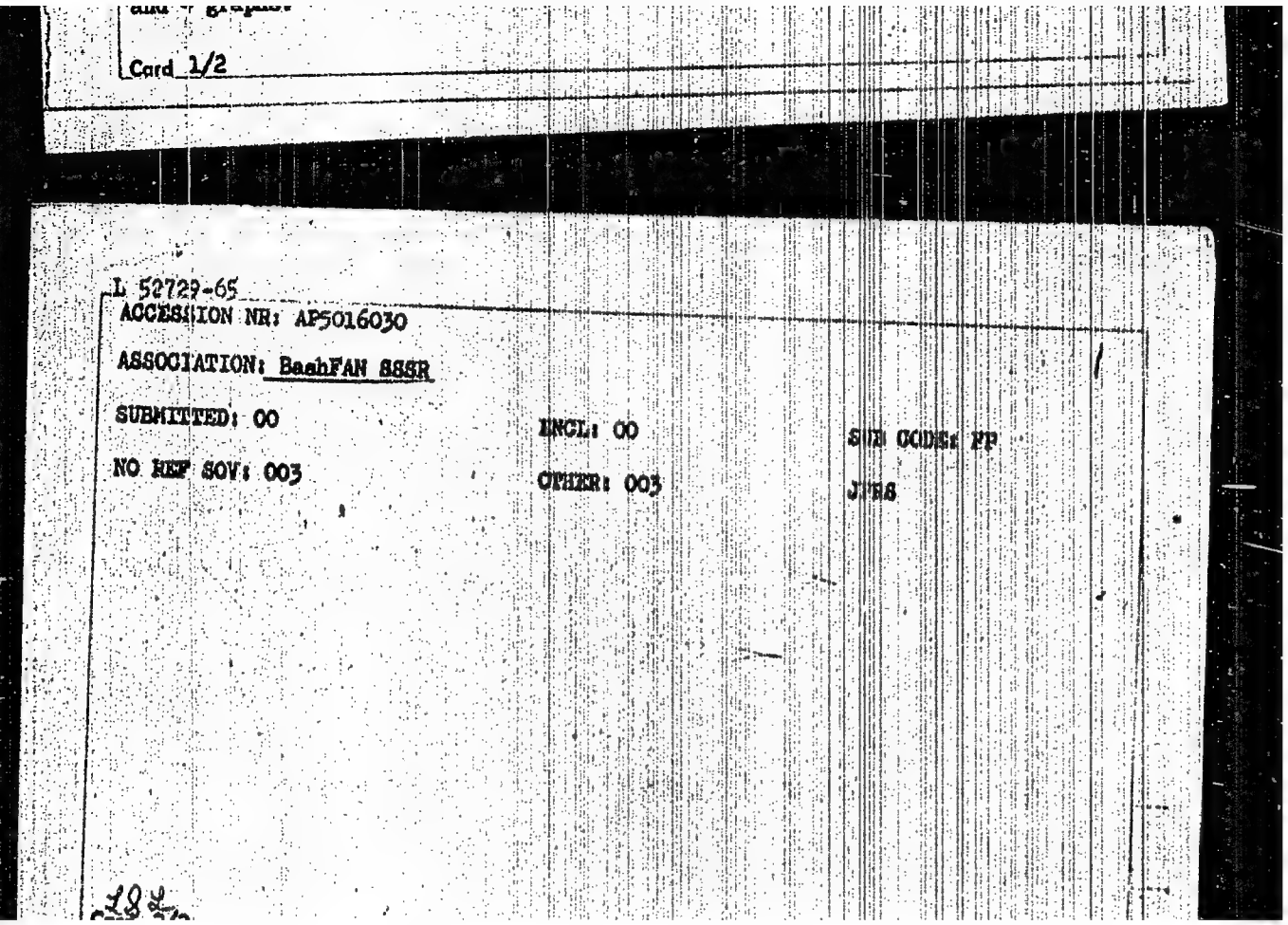
Card 2/2

KALANTAR, N.G.; GLAZUNOV, V.I.; MANNAFOVA, V.S.; Prinimali uchastiye: GABSATTAROVA, S.A.; OKUNEV, I.Ye.; KUL'MURZINA, L.Kh.; AKHMETZYANOV, Ch.R.

Composition and properties of turbine distillates from Tuymazy crudes. Khim. i tekh. topl. i masel 8 no.9:31-38 S '63. (MIRA 16:11)

1. Bashkirskiy filial AN SSSR.





Card 1/2

L 52729-65
ACCESSION NR: AP5016030

ASSOCIATION: BashFAN SSSR

SUBMITTED: 00 ENCL: 00 SUB CODE: FP

NO REF SOV: 003 OTHER: 003 JPRS

S ..../60/000/0../004/00.
..../B...

9,1900

AUTHORS: Skuratovich, L. K., Engineer, ... Engineer, Glazunov, V. K., Engineer

TITLE: Switch for the Remote Retuning of an Antenna Circuit

PERIODICAL: Vestnik svyazi, 1960, No. ..., pp. ...

TEXT: A switch is described with which the antenna ... antenna box can be retuned from the transmitter station. Retuning takes place by means of a remote-controlled electric motor which adjusts the mobile part of the switch. The mobile part guided in guides and adjusts the wavelength desired. Adjustment is done with four metal rods which turn the cross-talk coupling capacity of the antenna, the shortening capacity ... and the lengthening inductivity ... the wavelength desired. Technical details ... short-circuit ... reversing switches of the electric motor are described in detail. There are 6 figures and 1 table.

Card 1/2

36314

Switch for the Remote Retuning of an Antenna Circuit

S/111/60/000/0[illegible]/003/003
B019/B064

ASSOCIATION: Belorusskiy [illegible]
(Belorussk[illegible]

Card 2/2

KALANTAR, N.G.; GLAZUNOV, V.I.; MANNAFOVA, V.S.; Prinimali uchastiye: GABSATAROVA, S.A.; YUSUPOVA, F.S.

Composition and properties of transformer oil distillates from Tuymazy petroleum. Khim.i tekh.topl.i masel 7 no.5:43-49 My '62. (MIRA 15:11)

1. Bashkirskiy filial AN SSSR.
(Tuymazy region--Petroleum) (Insulating oils)

KALANTAR, M.G.; Prinimali uchastiye: MANNAFOVA, V.S.; GLAZUNOV, V.I.; GABSATAROVA, S.A.; KUL'MUKHAMETOVA, L.Kh.; AKHMEDZYANOV, G.A.

Turbine oil 22 from Tuymazy crudes. Khim.i tekh.topl.i masel 7 no.9:29-34 S '62. (MIRA 15:8)

1. Bashkirskiy filial AN SSSR.
(Insulating oils)

KUZNETSOV, S.I.; ROMANENKO, V.I.; GLAZUNOV, V.I.

Production of organic matter at the expense of the photosynthesis of phytoplankton in Lake Baikal. Dokl. AN SSSR 156 no.6:1444-1447 Je '64. (MIRA 17:8)

1. Institut biologii vnutrennikh vod AN SSSR i Limnologicheskiy institut Sibirskogo otdeleniya AN SSSR. 2. Chlen-korrespondent AN SSSR (for Kuznetsov).